ALEXITHYMIA AND SOMATIZATION IN PATIENTS WITH DEPRESSION AND THEIR IMPACT ON SOCIAL FUNCTIONING

Dissertation submitted for partial fulfillment

of the rules and regulations

DOCTOR OF MEDICINE

BRANCH - XVIII (PSYCHIATRY)

THE TAMILNADU DR.MGR MEDICAL UNIVERSITY,

CHENNAI, TAMIL NADU

MAY 2019

CERTIFICATE

This is to certify that the dissertation titled **"A STUDY ON ALEXITHYMIA AND SOMATIZATION IN PATIENTS WITH DEPRESSION AND THEIR IMPACTON SOCIAL FUNCTIONING"** is the bonafide work of **Dr. SANJAY.B** in part fulfillment of the requirements for the M.D. Branch – XVIII (Psychiatry) examination of The Tamilnadu Dr. M. G. R. Medical University, to be held in May 2019. The period of study was from April 2017 to September 2017.

The Director,
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CERTIFICATE OF GUIDE

This is to certify that the dissertation titled, **"A STUDY ON ALEXITHYMIA AND SOMATIZATION IN PATIENTS WITH DEPRESSION AND THEIR IMPACTON SOCIAL FUNCTIONING" is** the original work of **Dr. SANJAY.B**, done under my guidance submitted in partial fulfillment of the requirements for M.D. Branch – XVIII [Psychiatry] examination of The Tamilnadu Dr. M. G. R. Medical University, to be held in May 2019.

Dr V. VENKATESH MATHAN KUMAR, MD,
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DECLARATION

I, **Dr. SANJAY.B**, solemnly declare that the dissertation titled, **"A STUDY ON ALEXITHYMIA AND SOMATIZATION IN PATIENTS WITH DEPRESSION AND THEIR IMPACTON SOCIAL FUNCTIONING"** is a bonafide work done by myself at the Madras Medical College, Chennai, during the period from April 2017 – September 2017 under the guidance and supervision of **Prof. Dr. POORNACHANDRIKA MD, DCH**, Professor of Psychiatry, Madras Medical College. The dissertation is submitted to The Tamilnadu Dr. M.G.R. Medical University towards part fulfillment for M.D. Branch XVIII (Psychiatry) examination.

Place: Chennai **Dr. SANJAY**

Date :

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INSTITUTIONAL ETHICS COMMITTEE
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CERTIFICATE OF APPROVAL

To

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Dear Dr.Sanjay.B.,

The Institutional Ethics Committee has considered your request and approved your study titled **"ALEXITHYMIA AND SOMATISATION IN PATIENTS WITH DEPRESSION AND THEIR IMPACT ON SOCIAL FUNCTIONING " - NO.11042017**

The following members of Ethics Committee were present in the meeting hold on **04.04.2017** conducted at Madras Medical College, Chennai 3

1.Prof.Dr.C.Rajendran, MD.,	:Chairperson
2.Prof.K.Narayanasamy, MD.,DM.,Dean(FAC), MMC,Ch-3	:Deputy Chairperson
3.Prof.Sudha Seshayyan,MD., Vice Principal,MMC,Ch-3	:Member Secretary
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7.Tmt.J.Rajalakshmi, JAO,MMC, Ch-3	: Lay Person
8.Thiru S.Govindasamy, BA.,BL,High Court,Chennai	: Lawyer
9.Tmt.Arnold Saulina, MA.,MSW.,	:Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

Member Secretary – Ethics Committee

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Instances where selected sources appear:

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ABBREVIATIONS

ACC	-	Anterior Cingulate Cortex
COMT	-	Catechol-O-Methyl- Transferase
DALY	-	Disability Adjusted Life Years
DIF	-	Difficulty Identifying Feeling
DDF	-	Difficulty Describing Feeling
DSM	-	Diagnostic and Statistical Manual
EOT	-	External Oriented Thinking
HAMD	-	Hamilton Depression Rating Scale
ICD	-	International Classification of Disease
MDD	-	Major Depressive Disorder
PET	-	Positron Emission Tomography
PHQ	-	Patient Health Questionnaire
TAS-20	-	Toronto Alexithymia Scale- 20
SOFAS	-	Social and Occupational Functioning Assessment Scale
WHO	-	World Health Organization

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INTRODUCTION

Depression is a chronic mental illness that causes alteration in mood, behavior, thoughts and physical health. It's a common disorder that may even affect person's individual ability to enjoy life and by causing a decline in capacity to undertake even the simplest daily tasks. Apart from its chronic nature, symptoms associated with depression are often recurring and life threatening. Depression is one of the leading causes of disability- adjusted life year (DALY) and According to WHO (World Health Organization) approximately 350 people worldwide are said to be suffer from this disorder. Even after remission of depression there is impairment in social functioning[1]. Various factors are responsible for such impairment.

As mentioned in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM- V) the main feature of major depressive disorder (MDD) is the development of depressed mood (dysphoria) and loss of interest in activities that were most pleasurable in the past (anhedonia) which present for the duration of two weeks. These symptoms must also be presented by at least four of the following features such as changes in the appetite or weight, changes in the sleep patterns, altered psychomotor activity, feelings of worthlessness or guilt, difficulty in concentration or making decisions and thoughts of death or suicidal ideation.

Even though there are many drugs developed for the treatment of depression, patients even after taking antidepressants fail to attain full

remission of disease. Some patients also develop treatment resistant depression in which the patients fail to respond to the available drugs or other therapeutic approaches. Social and occupational functioning impairment is present in most of the cases diagnosed with depression.

Hence while treating depressive disorder it is very important to assess the level of social and occupational functioning which can be done through validated measuring scale called SOFAS (social and occupational functioning assessment scales). During treatment and follow up, these measures should be consistently measured so that prognosis of the individual will be better.

Apart from above things there are certain conditions were much importance is not provided in our set up such as Alexithymia and somatization. It has been proved in many studies supporting that alexithymia and somatization occurs in depressed individuals[2].

Exploring these factors in our set up has been supported by very limited studies hence in this study we tried to explore this hidden factors using validated measure and put-forth the results.

ALEXITHYMIA

Alexithymia is defined as a "personality construct characterized by the sub-clinical inability to identify and describe emotions in the self". The core characteristics of alexithymia are marked dysfunction in emotional awareness, social attachment, and interpersonal relating. Individuals suffering from alexithymia also have difficulty in distinguishing and appreciating the emotions

of others, which is thought to lead to un-empathic and ineffective emotional responding[3,4].

Alexithymia is prevalent in approximately 10% of the general population and is known to be comorbid with a number of psychiatric conditions. In studies of the general population the degree of alexithymia was found to be influenced by age, gender and various factors. several studies have reported that the prevalence rate of alexithymia is less than 10%[5]. The existence and study of Alexithymia experiences started as early in the 1970's. Some research suggest that alexithymia is more predominant in men than women[5,6].

Alexithymia has two components;

A cognitive component where people might face difficulties with thinking and emotions while trying to describe, understand and talk about feelings.

An affective component where people might struggle with the experience of sharing, responding to and sensing emotions.

Alexithymia is present in many of psychiatric conditions like depression, anxiety, personality disorder, substance use disorder, schizophrenia, panic disorder, eating disorder, etc. and medical conditions like systemic hypertension. Cardiovascular disease, inflammatory bowel disease, fibromyalgia etc[7,8].

Alexithymia can be measured by a self -report scale comprised of 20 items scale developed by Baghby et al n 1994. Each items rated on a five point Likert scale ranging from 1 strongly disagree to 5 strongly agree. TAS-20 is a reliable measure of emotion processing in adults which includes a total score and three subscales includes

DIF-difficult in identifying feeling,

DDF- difficulty in describing feeling,

EOT-difficulty in externally oriented thinking[9].

Higher alexithymia scores were significantly associated with more severe depression symptoms. The DIF and DDF scales were significantly positively related to depression severity, indicating that patients with more severe depression reported greater difficulty in identifying and describing their feelings.

SOMATIZATION

Soma' means body. Somatic symptoms are the symptoms experienced in the body like physical sensations, experiences or movements. Few examples include dizziness, pain, nausea and fainting. Various problems can be felt as somatic symptoms but not all symptoms gain attention in daily routine activities or causing distress or impairment to the individuals. Somatization is a normal human experience, but sometimes these body symptoms cause problems in everyday life[10,11].

In literature various terms have been used to describe somatic symptoms in depression as like somatic, somatized, physical, somatoform, bodily, painful, vegetative, psychosomatic, masked, medically unexplained. These terms had been used for different diagnostic and theoretical concepts[12].

Common somatic symptoms include

- abdominal pain
- headache
- fatigue
- nausea
- chronic pain

somatic symptoms can be rated using somatic symptoms severity scale-patient health questionnaire physical symptoms;

Alexithymia and somatization is seen in patients with depression. Even after remission of depression there is impact in the impairment of social functioning to certain extent. Studies regarding alexithymia has been done since many years but Indian studies on alexithymia is very few. This study focus on alexithymia and somatization in patients presenting with depressive illness and how it is impacted on their social functioning. In this study we have tried to establish the prevalence of alexithymia and somatization in depressive individuals and compare various sociodemographic profiles, and illness domains pertaining to both alexithymia and somatization. We have also tried to

assess how these both contribute to social functioning impairment in depression disorder. By doing this study it is easy for a treating person to identify the individuals with these two major factors which helps in part of assessing prognostic factors and to consider close follow up among these two groups of individuals and thereby to reduce the dropout rate and also to attain a good recovery from illness.

REVIEW OF LITERATURE

ALEXITHYMIA

Alexithymia is defined as a "subclinical phenomenon that involves lack of emotional awareness or more specifically there is difficulty in describing feelings and identifying feelings and also in distinguishing feelings from the bodily sensation of emotional arousal" (Nemiah et al.)

LEXIXOLOGY

The term alexithymia was coined by psychotherapists John Case Nemiah & Peter sifneos in the year 1973. Nemiah was the editor of American journal of psychiatry. His interest is in the field of psychosomatic researches and he worked in Boston Institute of psychoanalysis. Word Alexithymia comes from Greek 'a'- 'not'; 'lexis'- 'words'; thymos, 'heart'- emotions, which literally means" no words for emotions".

DEFINITION- by Graeme J Talor-1997

1- "Difficulty identifying feelings and distinguishing between feelings and the bodily sensation of emotional arousal
2- Difficulty describing feelings to other people
3- Constricted emotional process as evidenced by scarcity of fantasies
4- A stimulus bound externally oriented cognitive styles"

Alexithymia is considered as a personality trait that may places affected individuals in a risk for other psychiatric and medical disorders. It is dimensionally personality trait that varies in severity from individual to individuals.[13]

DESCRIPTIONS

Deficit in Alexithymia may include identifying problems and processing it and also it also deficit in describing and working with one's own feeling. It is often marked by a significant lack of understanding the feelings of others.

According to Parker, James DA et al. confusion of physical sensations is associated with emotions; or fantasies due to restriction of imagination; and concrete, realistic and logical thinking often due to the exclusion of emotional responses to the problems[14].

According to Nemiah et al., some Alexithymia individuals may contradict the above described characteristics because those individuals may experience chronic dysphoric mood or shows outbursts of crying or rage[15].

Individuals who are suffering from alexithymia think themselves in such an operative way and appear to be over adjusted to the setting of reality.

In psychotherapy however a disturbance in cognition become very apparent as patients tend to recount trivial, chronologically ordered actions, reactions, and events of daily life with monotonous details[4].

Definition of Alexithymia by -Freyberger; Nemiah; Sifeneos; 1976.,

Alexithymia is a "cognitive affective deficit characterized by

A) Difficulty in identifying and describing feeling

B) Difficulty in distinguishing between feelings and bodily sensations

C) Impaired symbolic activity as evidenced by paucity of fantasy and other imaginative activity.

D) Externally oriented thinking i.e. preferences for focusing on external events rather than inner experience."

Alexithymia is associated with a reduced emotional functioning and difficulties in understanding and communicating emotion and feeling are its core feature.

Apart from its affective deficits, it has also been associated with numerous other affective difficulties which include symptoms of anhedonia (reduced capacity for positive emotional experience, prevalence of and proneness towards negative emotions poor emotional regulation and stress management abilities[16].

ALEXITHYMIA – REGULATION

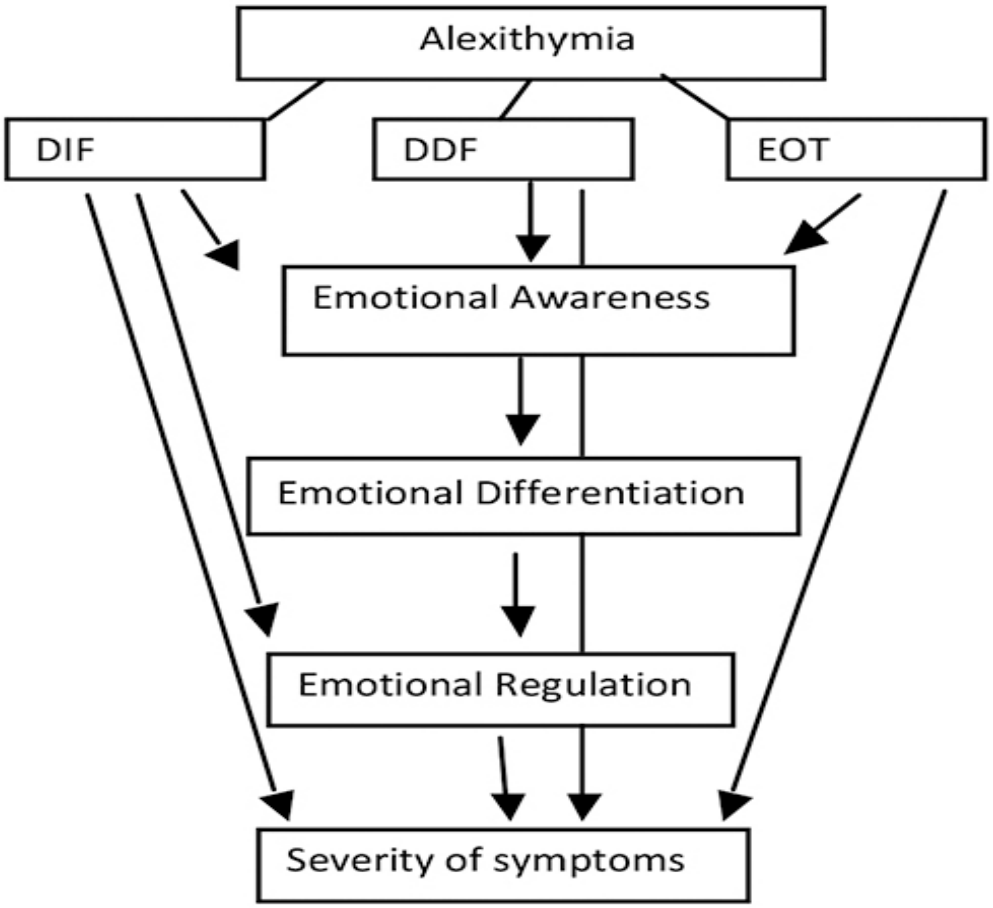

Fig-1- regulation of alexithymia

DIF-difficulty in identifying feeling

DDF-difficulty in describing feeling

EOT- externally oriented thinking

CLASSIFICATION OF ALEXITHYMIA

During dynamic psychotherapy the capacity of the individual to symbolize and translate the emotions into language is often considered to be one of the critical scenarios for improvement of symptoms. These capacities are greatly reduced/ lacking in Alexithymia.

Alexithymia is considered to have both state-dependent and trait dependent features[17].

Trait dependent features are associated with traits of personality including avoidant, schizotypal, dependent and passive aggressive (Nicol G, et al[18]) and as described by Bach M, de Zwaan M, et al[19]-lack of association with histrionic features reinforce the notion that the construct of Alexithymia captures psychological dimensions related to individual differences.

TYPES OF ALEXITHYMIA

1. Primary alexithymia
2. Secondary alexithymia
3. Organic alexithymia

Messina A, Beadle JN, Paradiso S. et al.[20]

PRIMARY ALEXITHYMIA

Alexithymia is considered to be primary when it emerges as a lifelong dispositional factor that can lead an individual to psychosomatic illness. Often It derives from a psychic trauma occurring during the period of childhood or from the negative primary caregiver interactions (Krystal et al). It has been recently suggested that genetic polymorphism of serotonin transporter inked with the promotor region i.e. L/L alleles may influence the occurrence of alexithymia[21,22].

Hence the primary alexithymia is currently considered as more or less stable personality trait that becomes moulded during the period of childhood and early adulthood years therefore primary alexithymia is developmental in nature. It also has no purported organic /psychological risk factors.

SECONDARY ALEXITHYMIA

According to Wise TN, Mann LS, Mitchell JD et al.[23].It is posited to arise not during the period of development but resulted as a consequence of events that occurring in the later life. It may be linked due to events with psychological significance and or medical/ surgical events (illness or disease) that may have significant distress or indirect effect on functioning of brain and therefore secondary alexithymia may have both psychological and or somatic mechanism[23].

According to the ***freyberger et al***., if the stress full event is in the form of an illness, as a process of defense mechanism alexithymia will evoke in an

individual which makes an attempt to manage/cope up with the stress of that illness[24].

Study done by ***wise et al.,*** among 53 inpatients of alexithymia individuals examined in a teaching hospital psychiatric consultation services and researcher has been arrived to the result that alexithymia acts as a defensive role as a process of state reaction in the medically ill individuals. In other words, alexithymia which occurs secondary to a psychologically significant stressor/event may develop as a protection or defense against highly emotional events[24,25].

This evidence is adequately supported in one of the study done by Yehuda.R, steiner et al, and found that alexithymia is found among holocaust survivors and in another study done by Zeitlin S.B, Mcnally R J, Cassiday KL, suggested that alexithymia is also found in most of sexual assault victims[26,27]. Messina et al, in 2011 found reason that decreased oxygen tension to the brain is the causes for secondary alexithymia

Precisely defining both above types as

PRIMARY ALEXITHYMIA - Is a vulnerability factor for mental illness, widely considered to be a personality trait in the which affective processing is less developed than normal due to childhood trauma or genetic predisposition.

SECONDARY ALEXITHYMIA- Is a consequences of illness as a condition occurring later in life either due to psychological trauma or as a direct insult to brain regions which is associated with the emotion processing and awareness.

Organic Alexithymia- a specific subtype of secondary alexithymia

Organic alexithymia refers to a condition in which alexithymia is caused by organic damage to brain structures involved in emotional processing through indirect/ direct insults to brain[28].

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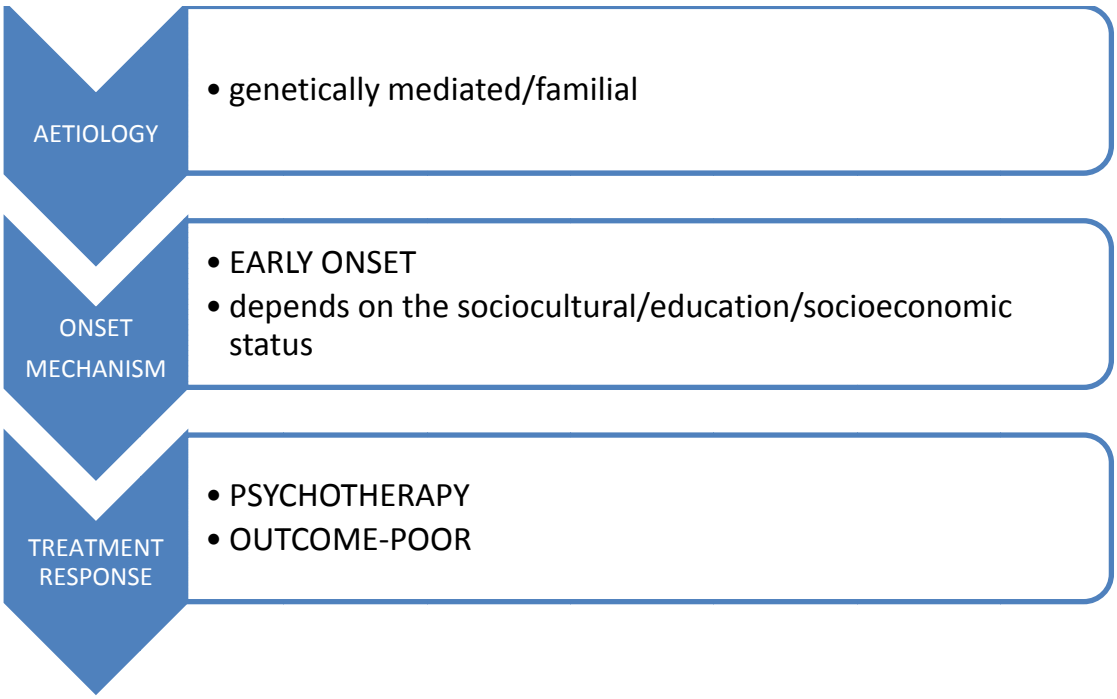
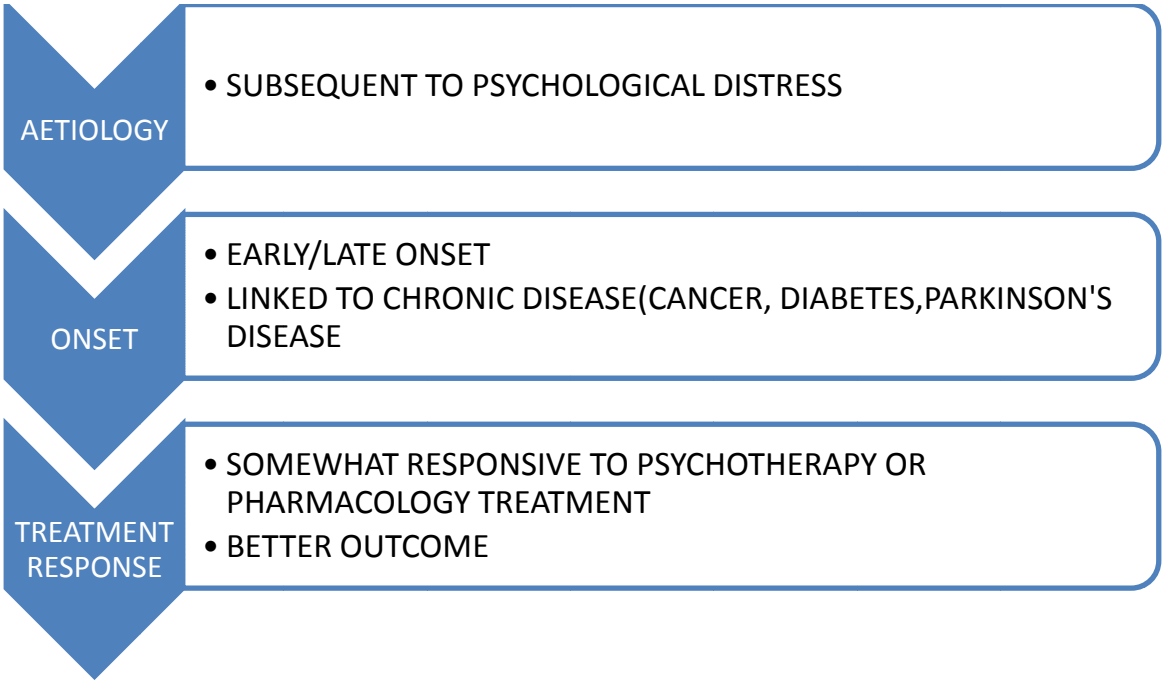
Fig-2; AETILOGY- PRIMARY ALEXITHYMIA



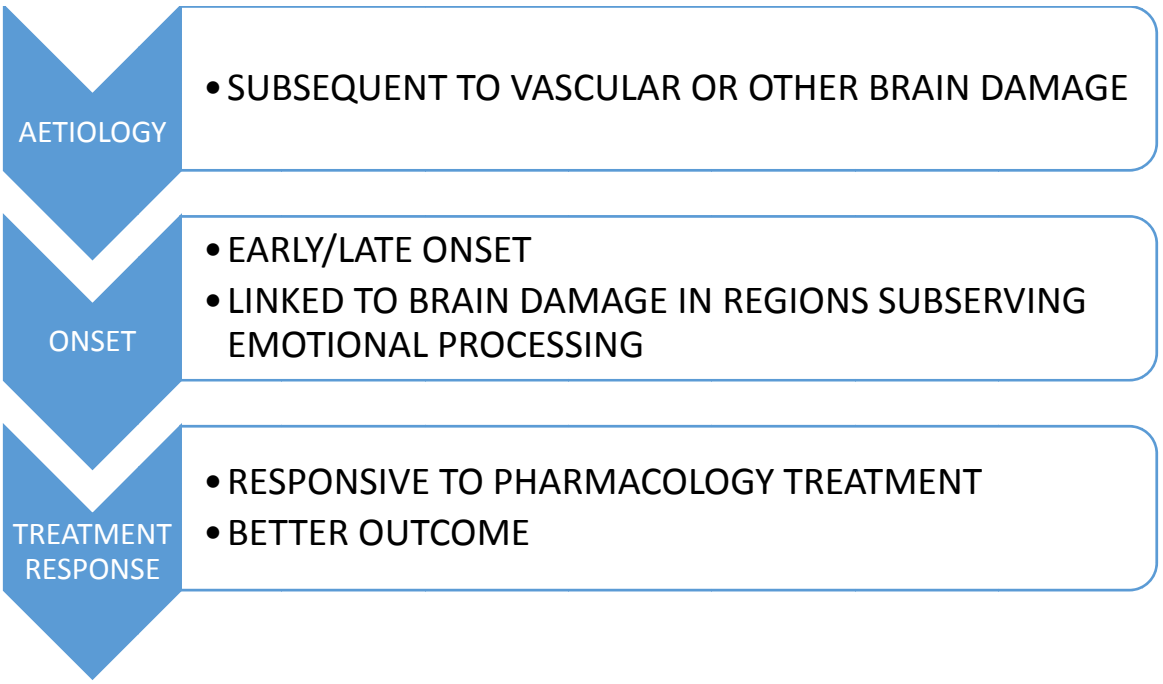
De Vente W, Kamphuis JH, Emmelkamp PM et al. Demonstrated that recognition and treatment of alexithymia is to be warranted because of its potential as a risk factor for psychiatric disorders[29]. Lumley MA, Wehmer F et al, described alexithymia may exert influence on illness behavior based on physical symptoms, disability, and excessive health care use[30].

Fig-3; AETILOGY- SECONDARY ALEXITHYMIA



Secondary alexithymia may be a response to a psychological distress of an organic disease or psychological trauma[23].

Fig-4; AETILOGY- ORGANIC ALEXITHYMIA



Wood RL, Williams C, Lewis R et al, demonstrated that organic alexithymia may be considered to be a specific subtype of secondary alexithymia that is a consequence of brain damage[31]

SOCIODEMOGRAPHIC VARIABLES AND ILLNES PARAMETERS IN ALEXITHYMIA RELATED WITH DEPRESSION

Study done by Taycan O et al found that alexithymia is found in the mean age of 32.41±10.02 among depressed individuals. He measured alexithymia using the validated TAS-20(TORONTO AEXITHYMIA SCALE-20) scale were the individuals scored highfalls under the above mentioned mean age. and in another other study done by Mattila AK et al and Honkalampi.K.et al found that mean age of (48.1±9.8) are more significant for alexithymia[32,33,34].

Salminen et al. and Honkalampi.K.et al. studied about the gender attribution in alexithymia and other sociodemographic factors related with alexithymia and found prevalence of alexithymia is more among men on comparing with females[33,34].

Honkalampi K, Hintikka J et al [34]stated that alexithymia is more common among divorced and unmarried individuals when compared with married individuals.

With respect to economic status studies done by Kokkonen P et al[35] had found that the analyzed indicators of socio-economic status (education, income, employment) showed decreasing TAS-20 sum scores with ascending social status.

On evaluating the role of family and environment studies done by Evren C et al and Kooiman CG et al demonstrated that type of parenting and family discord has been related as a possible predictor for the development of Alexithymia in an individual[36,37].

Study done by Rybakowski et al. evaluated the relation of family history of psychiatric illness in accordance with Alexithymia and found that family h/o of disorders like substance use disorders, mood disorders are commonly associated with alexithymia[38,39].

Medical comorbidity in alexithymia has been investigated in earlier studies and found that diseases pertaining cardiovascular system, gastro intestinal system, central nervous system disease[40,41] are more common system involved as a comorbidity.

On evaluating the relation of suicidal behavior with alexithymia and depression Taiminen TJ et al in his study found that the measurement of alexithymia does not yield extra information regarding suicide risk [42].

Study done by Connelly, Met al[43] with respect to evaluating the stressor associated with alexithymia and its impact on depression and established a strong evidence with stressors are more prevalent in individuals with Alexithymia.

Study done by Conrad, R., Wegener et al. found many psychopathological Symptoms in major depressive disorder are related with alexithymia [44].

study done by Günther, V. et Al[45] On assessing the proportions of depression severity using HAM-D, More the severity of depression is associated with higher alexithymia scores.

NEUROANATOMICAL CHANGES IN ALEXITHYMIA.

1- Borsci et al, 2009 – stated that decreased grey matter volume in anterior cingulate cortex
2- Romei et al, 2008 and Lumely et al 2000- stated that interhemispheric transfer impairment in corpus collosum
3- Borsci et al, 2009- stated decreased grey matter in right temporal lobe
4- Lee et al ,2011- stated functional impairment in caudate and fronto-striatal circuit
5- Lumley et al ,2000- functional impairment in right hemisphere

NEUROBIOLOGY OF ALEXITHYMIA;

Traumatic dimension of the origin of Alexithymia.

According to Heiberg A, Heiberg A[46]Alexithymia genesis has been located in the early and critical developmental stages which is conceptualized by some authors naming secondary alexithymia. It has been associated to psychological trauma and impact that emerges from physical and psychological ill-treatment, and also from negligence experiences and child sexual abuse.

Involvement of self-referential processing involves a default network mode involves[47]

1-prefrontal cortex

2-anterior cingulate cortex

3-posterior cingulate cortex

4-inferior parietal cortex

5-Bilateral angular gyrus

6-medial prefrontal cortex

In other words, during the early trauma, damage to above network resulting in a lack of awareness in the emotion, thus provoking a difficulty in emotional expression and verbal identification which are the components and core features of alexithymia[48,49].

Role of Mirror neurons and theory of mind in alexithymia

Mirror neurons are suggested to be activated in diverse facial expressions, social interaction and implicated in deficit conditions such as Alexithymia.

Morguchi et alfocused on the relation between alexithymia and mirror neurons and identified increased degree of alexithymia is associated with increased activity of superior and inferior parietal cortex and premotor cortex when compared to group with lesser degrees.[50,51]

Scholl BJ, Leslie AM[52] found that in fundamental aspect of Alexithymia development related to an encoded ability in genetic modules which are triggered by environmental keys such as language.

BRAIN STRUCTURES- ROLE OF BRAIN HEMISPHERES IN ALEXITHYMIA

Initially alexithymia was related to the decreased connection between both hemispheres of brain that prevents the processing between right and left hemisphere

Right hemisphere- non-verbal affective unconscious information

left hemisphere – logical analytical verbal thinking

Study done by Bermond B, Vorst HC, Moormann P et al.[53]stressed that alexithymia is associated with functional commisurotomy. And zeitlin et al[54]verified it using a topognosis test, which indicates a great association between alexithymia and deficient bidirectional interhemispheric communication. Romei et al[55]reasserted by providing new findings by the appraisal of magnetic transcranial investigation methods.

Goerlich-Dobre et al[56]investigated and proposed different alexithymia subtypes which displays variety of volumetric patterns throughout the brain structures which are related to the processing of emotion. There is a reduction in gray matter in different brain regions when compared with non-Alexithymia in this study.

Few investigations have established an association between the alexithymia and right hemisphere injuries. Jessimer et al concluded that higher level of alexithymia was related with decreased response in right sided hemisphere and they have a lesser capacity in recognizing the facial emotional expression[57,58].

Positron emission tomography (PET) has shown that in individuals with alexithymia, right hemisphere of brain has lower blood flow when compared with individuals who do not have alexithymia.

Many studies are done in pertaining to the sex differences[59,60,61].

In males- there is an evidence of altered right hemisphere in individuals possessing high degree of alexithymia

In females- it is related to the bi-hemispheric alterations and also left brain predomination[59].

ALEXITHYMIA AND AMYGDALA: RELATED TO FACIAL EXPRESSION AND EMOTIONAL REACTIVITY.

Many study had been linked with Alexithymia to hypo-function of the amygdala during facial emotional processing[62,63]. And evidence by goerliche-Dobre et al stating reduced grey matter volume in right amygdala.

In a review done on primary neuro image exploration apart from described above there is also reduction I the activity of insula and anterior cingulate cortex which implies the reduction of activity in emotion when individuals with alexithymia face the external stimuli[64]. Hence it could be

hypothesized that these morphological and functional abnormality could trigger the traits of individuals with alexithymia.

ALEXITHYMIA AND ANTERIOR CINGULATE CORTEX

Anterior cingulate cortex is a cortical formation which is located around the corpus collosum, which is involved in the emotional processing and behavior.

Series of Study done by Wingbermühle E, Theunissen H, Verhoeven WM, Kessels RP, Egger JI[65]shown a detriment of function associated with ACC in individuals with alexithymia.

Using PET kano et al.[66]demonstrated reduced activity in ACC IN group of individuals when they are shown visualization of angry face expression.

Karlsson et al.[67] demonstrated an association between reduced activation of anterior cingulate cortex (ACC) under the induction of emotion such as positive/ negative and neutral in women which is mediated by the visualizing the cinematographic films and also observed a high frequency of somatization in people with alexithymia due to the bigger activation of somatosensory and motor cortex.

Gündel H, López-Sala A, Ceballos-Baumann AO, Deus J, Cardoner N, Marten-Mittag B, et al. [68]Described by exploring images of magnetic resonance and found a positive correlation of size of right ACC and Alexihymia

ALEXITHYMIA- Genetic consideration

In the earlier period in late 1970, heiberg is the first to document that the possibility that origin of alexithymia could influenced by the hereditary factors[69]

Valera and Berenbaum explored the study with twins and found an association between alexithymia scores obtained in TAS-20 , its dimension and genetic factors[46] .

It has been suggested that modulation of neural system that makes connecting bridge of cerebral structures that involved in the emotional and cognitive processing is by means of dopaminergic neuron on the substantia nigral structures[70]and also it has been studies that presence of relevant polymorphism of dopaminergic neural substrate dopamine (Val66Met and DRD2/ANKK Tag IA were associated with lowering volume of ACC, and therefore alexithymia related to dopaminergic role is proposed[71] .

Ham BJ, Lee MS, Lee YM, Kim MK, Choi MJ, Oh KS, et al from his study noticed that val[108/158] Met polymorphism is the gene that encodes for the enzyme called COMT (caecthol-O- methyl transferase)Which is involved in the catabolism of dopamine, is related to alexithymia[70].

TORONTO ALEXITYMIA SCALE-20

Toronto alexithymia scale (TAS-20) (Bagby et al) is a self-report scale comprised of 20 items[72]. Each item is rated on a five point Likert scale ranging from 1 strongly disagree to 5 strongly disagree.

It has been translated and validated into 18 languages and its efficacy has been evaluated with confirmatory factor analysis.

TAS-20 is a reliable and valid measures of emotional processing in adults which includes a total score and three subscales.

DIF- difficulty in identifying feeling

DDF- difficulty in describing feeling

EOT- difficulty in externally oriented thinking

Taylor et al 1988, Bagby et al 1994 b

First factor in 3 factor model for TAS-20 consist of seven items assessing the ability to identify feelings and to distinguish them from the somatic sensation that accompany emotional arousal.

Factor -2- consist of five items assessing the ability to describe feeling to other peoples.

Factor-3- consist of eight items assessing externally oriented thinking

Empirical derived cut off score-61 is used to identify feeling with high or low alexithymia scales.

It has become most widely used instrument for assessing alexithymia n both clinical practice as well as in researches.

Over the years there has been accumulating evidence related to reliable and valid

Study done by James and parker Graeme J Taylor, R.Michal Bagby found that 20 items scale- TAS has good reliability and factorial validity in community population[73,74].

In this study 1933 adults (880 men and 1053) women was involved. Mean age of sample was 35.47 years, mean level of education was 14.75 years. From this study, TAS-20 was replicable in men and women results were consistent with several studies

Internal consistency- 0.70

Mean inter item-correlation- .20-.40

Coefficient - .62 men; .63 for women

Scored more in men> women

SOMATIC SYMPTOMS AND DEPRESSION

Somatic symptoms in depression have been described in various terms in the literature for different diagnostic and theoretical concepts[12,75].

Hamilton M et al, states higher frequency of somatic symptoms prevailed in depression patients. Akiskal HS found that depression with

somatic symptoms are the most common form of depressive illness presentation. It is presented in both inpatient and outpatient care.

Hagnell O Rorsman B et al, studied about depression and somatic symptoms in suicide as prospective longitudinal cohort study. In this 3563 persons were followed up for 25 years. 14/19 persons were suffering from depression predominately having somatic symptoms[76].

Depression research done by Tylee A Gasper et al, reported that 2 of 3 most common symptoms reported during depressive episodes was somatic.

- Tiredness
- Decreased energy
- Listless
- Decreased sleep

WHO conducted multi-centered international studies (n=1146) has confirmed 2/3 of patients presents depressive mood along with somatic symptoms exclusively and nearly half of the patients has unexplained somatic symptoms.

SOCIODEMOGRAPHIC VARIABLES AND ILLNES PARAMETERS IN SOMATZATION RELATED WITH DEPRESSION

Study done by Kroenke K, Spitzer RL et al. in evaluating the Mean age of somatization and found the mean age of individuals with depression was 47±5 years. And it is more common in female gender when compared with males[77] studies done by Katon W, Kirmayer L.J et al. found that married individuals score more on somatization on compared with unmarried individuals and also the Prevalence of somatization decreases as socio economic status increase[78,79].

On describing the number of episodes of depressive illness it is found that higher number of episodes of episodes severe the somatization Katon W, Lin E et al.[80].

Chandler JD et al.[81]On assessing the proportion of hospitalization high level of somatic score is in hospitalized individuals when compared with non-hospitalized individuals which is due to the medical comorbidity which requires therapeutic intervention for the severity of symptoms[82,83].

Kirmayer L et al.[79]assessed the suicidality and stress related with somatization in individuals with depression and found that the suicidal attempt and stress are more prevalent than the individuals without somatization in depression.

WOMEN AND SOMATIC SYMPTOMS

Study done by Kroenkek, spritzer RL (prime-MD 1000 study) from 4 primary cases sites evaluated with primary care evaluation of mental disorders analyzed to determine gene differences in reporting 13 most common physical symptoms. Results obtained shows statistically significant 10 out of 13 symptoms were (somatoform) physically unexplained symptoms and it is found more commonly in women >50%.[77,84]

In another study which is conducted by Jackson et al found that women are more prone for somatic symptoms compared to men. A higher susceptibility of women for psychosocial stressor and somatic illness stressor was held reason for high prevalence for female patients.

Intermingling of somatization and depressive symptoms has disposition in various ways

Depressive mood triggers immediate illness and makes individual to report somatic symptom to seek medical care systems

BURDEN OF SOMATIC SYMPTOMS IN DEPRESSION;

Flecke de MP Almeida; Herman H et al found that patients who are psycho-pharmacologically treated for depression fails to reach full remission. Residual symptoms in majority of patients are somatic in nature generally worsening painful somatic symptoms more severe and longer the depressive episodes persist.

Fishback DA et al – considered chronic pain as the major risk factor in depression

Vonkorff and simon – found a significant correlation between intensity of pain symptoms and worsening of depressive disorder outcome

Neurobiological underpinning of somatic symptoms in depression

According to Nemeroff B – neurobiology of depression - pathophysiology following things paves way[85].

1. Polygenetic nature
2. Strong heritable disposition
3. Early developmental experience of maladaptive neurobiological stress system

For long time dysfunction in serotonergic / (noradrenergic/ dopaminergic neurotransmitter have been considered

On neuroanatomical basis – tracts of serotonergic system which starts in midbrain raphe cell bodies which project into the

1. Frontal cortex
2. Basal ganglia
3. Limbic system
4. Hypothalamus

Nor adrenergic system – originating in locuscoeruleus of brainstem projecting to other regions similarly as serotonin tracts

According to Stahls, deficiency in the activity of specific pathways of serotonin and norepinephrine leads to differential clinical phenomenology in depression commonly psychological and somatic symptoms.

For somatic symptoms especially vegetative domains involves

1. Changes in the appetite / weight.
2. Lack of pleasure
3. Sexual desire
4. Abnormalities in sleep
5. Hypothalamic dysfunction

Sleep centers were influenced by both serotonin and nor epinephrine brain areas which regulates motor dysfunction striatum/cerebellum and also spinal pathways transferring body's sensory input and modulating the physical tiredness.

Diffuse cortical circuits - influenced by acetyl choline, histamine, norepinephrine, dopamine neurotransmission.

According to Bair MJ, Robinson RL, Katon W et al- 2003

Imbalance in the neurotransmitters like norepinephrine and serotonin which normally serves to inhibit sensory input from musculoskeletal systems, intestine and other regions in the body may accentuate pain sensitivity[86].

Chronic stress evoked by chronic pain leads to loss of negative glucocorticoid feedback in HPA axis and downregulation of glucocorticoid receptors within brain and body periphery

During chronic pain – loss of serotonergic and noradrenergic tone in response to glucocorticoid induced monoaminergic depletion may lead to descending inhibitory impulse to the spinal cord to effect and enhancement of pain sensation

Loss of glucocorticoid inhibition of pro-inflammatory cytokines leads to proliferation of peripheral inflammatory events contributing to pain sensitization.

Somatic symptoms severity scale-patient health questionnaire physical symptoms;

DSM-5-LEVEL-2- somatic symptoms adult measure is an adaptation of 15 item patient health questionnaire physical symptoms PHQ-15 that assesses the domain of somatic symptoms. Each items suggest the individual to rate the severity of individual somatic symptoms

Each item on PHQ -15 is related on 3 points scale0-not bothered 1-bothered 2-bothered a lot.

Total score range from 0-30 Higher score indicating grades severity of somatic symptoms

Interpretation

Level of somatic severity	PHQ-15
Minimal	0-4
Low	5-9
Medium	10-14
High	`15-30

Psychosomatic characteristic of PHQ-15 is a brief, self-administered questionnaire that will be useful in screening for somatization and in monitoring somatic symptom severity in clinical practice and research as proved to be valid and reliable scale[84].

SOCIAL AND OCCUPATIONAL FUNCTIONING IN DEPRESSION-related with Alexithymia and Somatization.

A **World Health Organization** Study in Primary Care related with somatization in cross cultural perspective which includes India, done by Gureje O, Simon GE, Ustun TB, Goldberg DP et al. concluded that Somatization is a common problem in primary care across cultures and is associated with significant health problems and disability[87].

Similarly, in alexithymia related with depression there is more amount of impairment in social functioning which is evidenced by the previous study done by Nicolo G et al. and Delibas H et al.[1,18]

On using the SOFAS was assessing the social and occupational functioning is highly reliable and valid tool as evidenced by previous studies done by Lee JY, Cho MJ, Kwon JS et al.[88]

AIMS AND OBJECTIVES

1) To investigate the level of social functioning, alexithymia and somatization in patients with depression attending the INSTITUTE OF MENTAL HEALTH, CHENNAI.

2) To determine the impact of alexithymia and somatization on social functioning in depression individuals.

3) To compare the various domains related with alexithymia and somatization in depression individuals

METHODOLOGY

SETTING

The study was conducted in INSITUTE OF MENTAL HEALTH, CHENNAI. The necessary prior permission for conduct of the study was obtained from Director and Institutional Ethics Committee, Madras Medical College, Chennai.

STUDY POPULATION

Individuals attending INSTITUTE OF MENTAL HEALTH who are diagnosed as depressive disorder was involved in the study

SAMPLE SIZE:

A total of 100 sample size of depression disorder were included in the study.

SAMPLE SIZE CALCULATION:

For this cross –sectional study, sample size calculation was done in accordance with the prevalence of alexithymia 46.4% and somatization 44.6% in depression with earlier studies

Formula used in cross –sectional studies to calculate sample size is Sample size=$4pq/L^{2.}$ We arrive at a sample size of 99 in accordance with this study and so a sample size of 100 being enrolled in our study.

PERIOD OF STUDY:

The study was conducted for a duration of 4 months from April 2017-september 2017

SAMPLING METHOD:

Non probability sampling cross-sectional

RESEARCH DESIGN

After getting approval from the institutional ethical committee, Madras Medical College and also approval from the director of Institute of mental health (IMH), Patients consulted in IMH those who are fulfilling the criteria for depression according to the ICD-10 were chosen up for the study. This is a cross sectional study. Sample size of 100 individuals were selected for the study based on the inclusion and exclusion criteria. Written informed consent and detailed explanation in individual's mother tongue has been given before enrolling them in the study. After this the individual's depression severity were assessed using the HAMD scale, level of social and occupational functioning among individuals were assessed using SOFAS (social and occupational functioning assessment scale), and then scales for Alexithymia and somatization like TAS-20(TORONTO ALEXITHYMIC SCALE), PHQ-15-SOMATIC SYMPTOM SEVERITY SCALE, were given to those individuals and categorized as two group Alexithymia and somatization groups based on the interpretation of above scales, after this various domains pertaining to

Alexithymia and somatization were compared using statistically appropriate measures

STATISTICAL ANALYSIS

Statistical analysis was performed using SPSS (IBM SPSS Statistics for Windows, Version 23.0, Armonk, NY: IBM Corp. Released 2015) is used. Significance level is fixed as 5% ($\alpha = 0.05$).To compare the proportions between variables Chi-Square test is applied, if any expected cell frequency is less than five then Fisher's exact test is used.

INCLUSION CRITERIA:

1) Patients diagnosed as depressive disorder as per ICD-10 criteria
2) Age group 18 years – 60 years
3) Both male and female

EXCLUSION CRITERIA

1) Patients with history of mental retardation, seizure disorder, other psychiatric conditions like schizophrenia, anxiety disorders.
2) Individuals who have not given concepts
3) Patients who couldn't provide adequate information were excluded from the study.

ASSESSMENT SCALES USED

1. Hamilton depression rating scale -HAMD
2. Toronto Alexithymia scale -TAS-20
3. Somatic symptom severity scale/ Physical health questionnaire - PHQ-15
4. Social and occupational functioning assessment scale –SOFAS

INSTRUMENTS USED:

1) **SEMI STRUCTURED PROFORMA**

It was used to collect subject's socio-demographic details like name age, sex, education, occupation, marital status, address, unemployment in terms of months, income and socio economic status according to modified Kuppuswamy scale. And details pertaining to the illness has been collected.

2) **ICD-10**

International classification of disease- ICD-10 was used to diagnose the case of individuals with depression.

3) **HAM-D**

Max Hamilton first introduced this Hamilton's rating scale [HAM-D or HDRS]189 in 1960. It is accepted widely and used to assess the severity of the depression and helps as a follow up guide to assess the treatment response in the recovery phase.

It has high inter-rater reliability and validity. Many versions of HDRS are available. In HAM-D 21 item version only 17 items were given scores and others are taken up for clinical information like hypersomnia, increased appetite and concentration and indecision. It takes about 20 minutes to administer

Eight items scored from 0 to 4 and other 9 items are scored from 0 to 2.

[0= not present;4=very severe].

SCORING

MILD	8-13
MODERATE	14- 18
SEVERE	19-22
VERY SEVERE	>23

4) **PHQ-15**

somatic symptoms can be rated using somatic symptoms severity scale-patient health questionarrie physical symptoms; The DSM-5 Level 2—Somatic Symptom—Adult measure is an adaptation of the 15-item Patient Health Questionnaire Physical Symptoms (PHQ-15) that assesses the domain of somatic symptoms. The measure is completed by the individuals. Each item asks the individual (or informant) to rate the severity of the individual's somatic symptom

SCORING AND INTERPRETATION

Each item on the PHQ-15 is rated on a 3-point scale

(0=not bothered at all;

1=bothered a little;

2= bothered a lot).

The total score can range from 0 to 30, with higher scores indicating greater severity of somatic symptoms. The clinician is asked review the score of each item on the measure during the clinical interview and indicate the raw score for each item in the section provided for "Clinician Use." The raw scores on the 15 items should be summed to obtain a total raw score and interpreted using the Interpretation Table for the PHQ-15 Somatic Symptom Severity scale below:

Level of somatic severity	PHQ-15
Minimal	0-4
Low	5-9
Medium	10-14
High	15-30

If 4 or more items are left unanswered on the PHQ-15 (i.e., more than 25% of the total items are missing) the total score should not be calculated. As such, the individual (or informant) should be encouraged to complete all of the items on the measure. If 1 to 3 items are left unanswered, you should prorate the raw score by first summing scores of items that were answered to get a partial raw score. Next, multiply the partial raw score by the total number of items on the measure (i.e., 15). Finally, divide the value by the number of items that were actually answered to obtain the prorated total raw score.

Prorated Score = (Partial Raw Score x number of items on the PHQ-15) Number of items that were actually answered If the result is a fraction, round to the nearest whole number. The prorated total raw score should be interpreted using the Interpretation Table for the PHQ-15 Somatic Symptom Severity scale above.

5) TORONTO ALEXITYMIA SCALE-20

Toronto alexithymia scale (TAS-20) is a self -report scale comprised of 20 items. Each item is rated on a five point Likert scale ranging from

A-STRONGLY DISAGREE

B- DISAGREE

C- NEITHER AGREE/ NOR DISAGREE

D-AGREE

E-STRONGLY AGREE

It has been translated and validated into 18 languages and its efficacy has been evaluated with confirmatory factor analysis.

TAS-20 is a reliable and valid measures of emotional processing in adults which includes a total score and three subscales.

DIF- difficulty in identifying feeling

DDF- difficulty in describing feeling

EOT- difficulty in externally oriented thinking

5 POINT LIKERT SCALE

Out of 20 items

5 ITEMS NEGATIVELY KEYED

TOTAL SCORE RANGE 20-100

SCORES

<51 – NON ALEXITHYMIA

52-60- POSSIBLE ALEXITHYMIA

>60- ALEXITHYMIA

6) **SOFAS**

The SOFAS is a new scale that differs from the Global Assessment of Functioning (GAF) Scale in that it focuses exclusively on the individual's level of social and occupational functioning and is not directly influenced by the overall severity of the individual's psychological symptoms.

Also in contrast to the GAF Scale, any impairment in social and occupational functioning that is due to general medical conditions is considered in making the SOFAS rating.

The SOFAS is usually used to rate functioning for the current period (i.e., the level of functioning at the time of the evaluation).

The SOFAS may also be used to rate functioning for other time periods. For example, for some purposes it may be useful to evaluate functioning for the past year (i.e., the highest level of functioning for at least a few months during the past year).

INTERPRETATION OF THE SOFAS Is one by measuring the severity level by the range of code begins from 0-100, as the scores increases functioning is better.Lower the score, more the impairment level.

RESULTS

The study was conducted at the Institute of mental health, Chennai. Patients who were selected are both outpatients and inpatients. Initially full physical examination was done to assess the physical status of the patient and to look for any severe medical co morbidity and other major psychiatric illness

A total of 120patients were enrolled, out of which 12 did not satisfy the inclusion criteria, 8 did not give their consent. So finally 100 participants were included in the study and informed consent was obtained.

Study population consisted of 100 participants

SOCIODEMOGRAPHIC DETAILS-

TABLE-1

STUDY POPULATION	Total	100
GENDER	Males	42
	Females	58
AGE	18-29 years	14
	30-39 years	37
	40-49 years	29
	50-59 years-	20
RESIDENTS	Urban	66
	Rural	44
SOCIO ECONOMIC STATUS	Lower	14
	Upper lower	68
	Lower middle	13
	Upper middle	05
MARITAL STATUS	Married	57
	Unmarried	36
	Divorce	07

Study population consists of 100 participants which includes 58 females and 42 male participants.

Among participant age group, majority 37% belongs to age between 30-39 years, 29% belongs to 40-49 years. Only 14% were under the age group 18-29 years.

In our study majority (66%) of the participants were from the urban location.

Regarding socio economic status according to modified kuppusamy scale, 68% belongs to upper lower class in this study. 14% belongs to lower class, 13% of participants are from lower middle class and 5% from upper middle class.

57 participants in the study were married, 36 were single and 7 participants were divorced.

ALEXITHYMIA PARAMETERS

TABLE -2

S.N0	ALEXITHYMIA PARAMETERS	RESULTS	N
1.	TOTAL NUMBER OF DEPRESSION INDIVIDUALS WITH ALEXITHYMIA	Males Females	33 26
2.	MEAN AGE	In years	35.36
3.	MARITAL STATUS	Married Unmarried Divorce	29 24 06
4.	SOCIO ECONOMIC STATUS	Lower Upper lower Lower middle Upper middle	06 40 08 05
5.	FAMILY TYPE	Nuclear Joint	32 27
6.	NO OF EPISODES OF DEPRESSION	1st episode 2nd episode 3 and more	22 21 16
7.	HOSPITALIZATION	Non hospitalized Hospitalized	26 33

8.	FAMILY H/O PSYCHIATRIC ILLNESS	No Yes	14 45
9.	MEDICAL COMORBIDITY	No Yes	17 42
10	SUICIDAL ATTEMPTS	Nil 1-2 times 2 times	26 27 06
11	DURATION OF OCCUPATIONAL IMPAIRMENT	Nil- 1-3 months 4-6months >6 months	02 03 35 19
12	DEPRESSION SEVERITY	Mild Moderate Sever Very severe	11 18 26 04
13	SOFAS SCORE	Serious impairment Moderate impairment Mild impairment	31 27 01 00

1. GENERAL PARAMETERS IN ALEXITHYMIA

Among 100 participants 59 individuals scored positively for alexithymia based on TAS-20 scales. Out of which 33 were males and 26 were females with mean age group of 35.36 years. 29 participants were married, 24 were single and 6 participants were divorced individuals.68% belongs to upper lower class economic status.32 individuals were from nuclear family and 27 individuals from joint family.

2. ILLNESS PARAMETERS IN ALEXITHYMIA

A) **Number of episodes of depression-** Among 59 individuals of depression with alexithymia in this study, 22 participants (37.3%) had first episode depression, 21 participants (35.6%) had second episode depression. Only 16 participants (27.1%) had 3 and more number of depressive episodes.

B) **Hospitalization-** Among 59 individuals of depression with alexithymia in this study, 33 participants (55.9%) required hospitalization i.e. admitted in inpatient care and 26 individuals (44.1%)did not require hospitalization.

C) **Family h/o psychiatric illness-** 45 Participants (76.2%)had family history of psychiatric illness and 14 individuals do not have family history of psychiatric illness

D) **Medical comorbidity-** 42 individuals had medical comorbid illness and 17 participants didn't have any medical comorbidity

E) **Suicidal attempts-** 33 participants (56%) in our study had one or more suicide attempts.

F) **Duration of occupational impairment-** majority of individuals (97%) had occupational impairment in our study. Out of which, 35 participants **(59.3%)**had occupational impairment for duration about 4-6 months and19 participants **(32.2%)**had more than 6 months of occupational impairment. Only 2 participants had no impairment.

G) **Depression severity-** On evaluating the depression severity with HAM-D rating scale it was found that very severe depression was found in 4 individuals, severe depression was found in 26 participants, 18 participants had moderate amount of depression, 11individuals had mild amount of depression severity.

H) **Sofas score-** On assessing the social and occupational impairment using SOFAS scale, it was found that 31 participants **(52.5%)**had serious level of impairment and 22 participants **(37.2%)** had moderate level of impairment and 8 individuals had mild level of social had occupational impairment

SOMATIZATION PARAMETERS

TABLE-3

S.NO	SOMATIZATION VARIABLES	RESULTS	
1	TOTAL NUMBER OF DEPRESSION INDIVIDUALS WITH HIGH SOMATIZATION	Males Females	16 27
2	MEAN AGE	In years	47.16
2	MARITAL STATUS	Married Unmarried Divorce	33 08 02
3	SOCIO ECONOMIC STATUS	Lower Upper lower Lower middle Upper middle	08 30 04 01
4	FAMILY TYPE	Nuclear Joint	30 13
5	NO OF EPISODES OF DEPRESSION	1st episode 2nd episode 3 and more	04 16 23
6	HOSPITALIZATION	Non hospitalized Hospitalized	08 35
7	FAMILY H/O PSYCHIATRIC	No	06

	ILLNESS	Yes	37
8	MEDICAL COMORBIDITY	No Yes	07 36
9	SUICIDAL ATTEMPTS	Nil 1-2 times 2 times	21 20 02
10	DURATION OF OCCUPATIONAL IMPAIRMENT	Nil 1-3 months 4-7months >6 months	00 00 34 09
11	DEPRESSION SEVERITY	Mild Moderate Severe Very severe	08 25 10 05
12	SOFAS SCORE	Serious impairment Moderate impairment Mild impairment	15 28 00

1. GENERAL PARAMETERS IN SOMATIZATION

Among 100 participants 43 individuals scored high somatization score on (PHQ-15 somatic symptom severity scale), among which 16 were males and 27 were females with mean age group of 47.16 years. 33 participants were married. Majority 69.7% individuals belong to upper lower class economic status. 30 individuals were from nuclear family and 13 individuals from joint family

2. ILLNESS PARAMETERS IN SOMATIZATION

A) **Number of episodes of depression-** Among 43 individuals of depression with high level of somatic symptoms in this study, 23 participants (53%) had 3 and more number of depressive episodes and 16 participants (37%) had second episode depression

B) **Hospitalization**- Among 43 individuals of depression with high level of somatic symptoms in this study, 35 participants **(81.3%)** required hospitalization i.e. admitted in inpatient care.

C) **Family h/o psychiatric illness-** 37 Participants **(86.1%)**had family history of psychiatric illness.

D) **Medical comorbidity- 3**6 individuals had medical comorbidity.

E) **Suicidal attempts-** 22 participants (51%) had past history of suicide attempts.

F) Duration of occupational impairment- All participants had occupational impairment. 34 participants **(791%)**had occupational impairment for duration about 4-6 months, 9 participants had more than 6 months of occupational impairment.

G) **Depression severity-** On evaluating the depression severity with HAM-D rating scale it is found that severe depression is found in 10 participants, 25participants had moderate level of depression, 8 individuals had mild amount of depression severity.

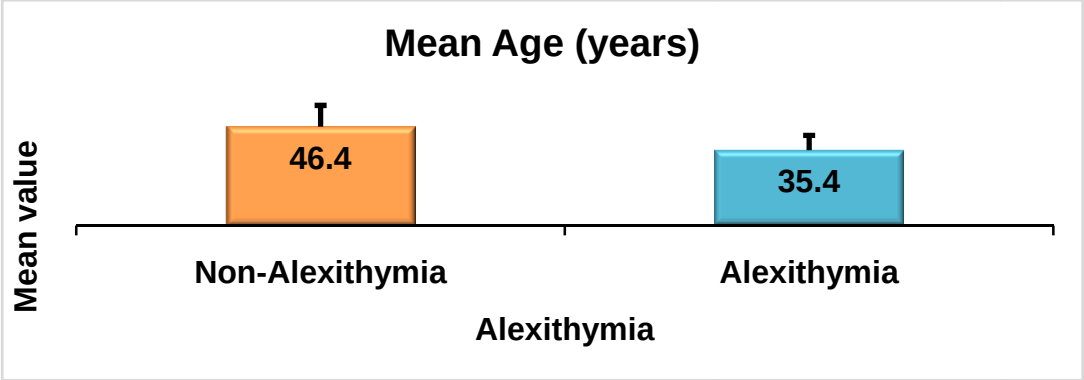
H) **Sofas score-** On assessing the social and occupational impairment using SOFAS scale, it is found that 15 participants had serious level of impairment and 28 participants **(65.1%)** had moderate level of social had occupational impairment.

COMPARATIVE PARAMETERS IN ALEXITHYMIA

A) COMPARING PROPORTION OF MEAN AGE

TABE-4

	Alexithymia	N	Mean	Std. Dev	t-value	p-value
Age (years)	Non-Alexithymia	41	46.39	9.992	6.117	<0.001
	Alexithymia	59	35.36	6.950		



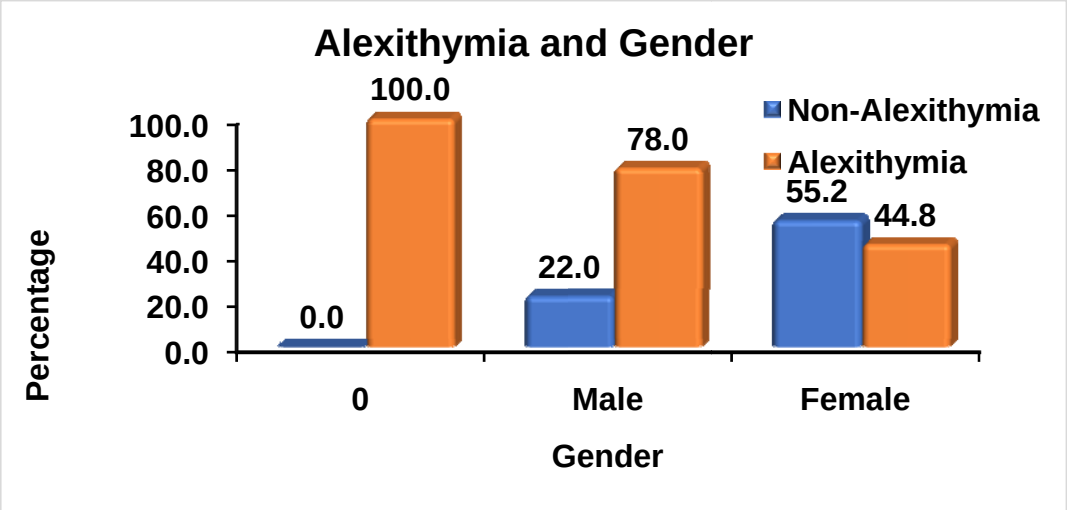
The mean age of participants with alexithymia was 35.36. On comparing with the non-alexithymia participants **it was statistically significant p <0.001**

B) COMPARING PROPORTIONS –OF GENDER

TABLE-5

Gender	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
Male	9	22.0	33	78.0	42	100.0
Female	32	55.2	26	44.8	58	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	11.714	0.001



Among gender comparison alexithymia was more common in males in our study. Out of 42 depressive male participant's alexithymia was found in 78% whereas, among female depressed participants' alexithymia is found in 44%. In chi-square test it was **statistically significant p 0.001**

C) COMPARING PROPORTIONS –OF MARITAL STATUS

TABLE-6

Marital status	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
Married	28	49.1	29	50.9	57	100.0
Unmarried	12	33.3	24	66.7	36	100.0
Divorce	1	14.3	6	85.7	7	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	4.253	0.123

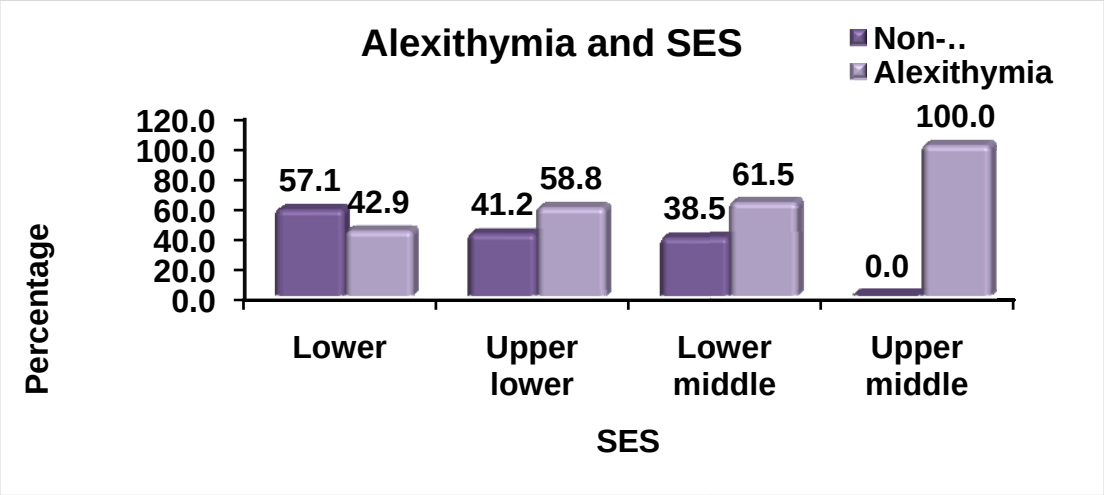
On comparing the marital status among the participants Alexithymia is more among divorce individuals and unmarried individuals, but statistically the result obtained is non-significant.

D) COMPARING PROPORTIONS –OF SOCIO ECONOMIC STATUS

TABLE-7

SOCIOECONOMIC STATUS	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
Lower	8	57.1	6	42.9	14	100.0
Upper lower	28	41.2	40	58.8	68	100.0
Lower middle	5	38.5	8	61.5	13	100.0
Upper middle	0	.0	5	100.0	5	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Trend Exact Test	3.966	0.046



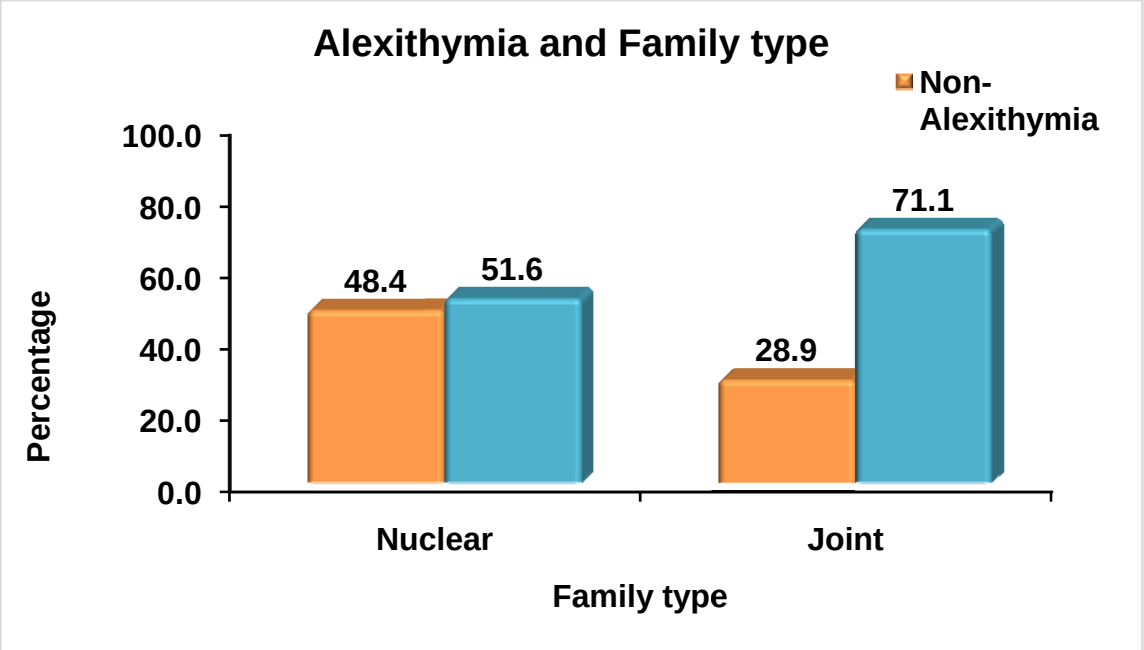
On assessing the socio economic status according to modified Kuppusamyscale, Alexithymia is more common in lower middle and upper middle class of socio economic status. In chi-square test it was **statically significant p<0.04**

E) COMPARING PROPORTIONS –OF FAMILY TYPE

TABLE-8

Family type						
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
Nuclear	30	48.4	32	51.6	62	100.0
Joint	11	28.9	27	71.1	38	100.0
Total	**41**	**41.0**	**59**	**59.0**	**100**	**100.0**

Chi-Square Test	Value	p-value
Pearson Chi-Square	3.681	0.055



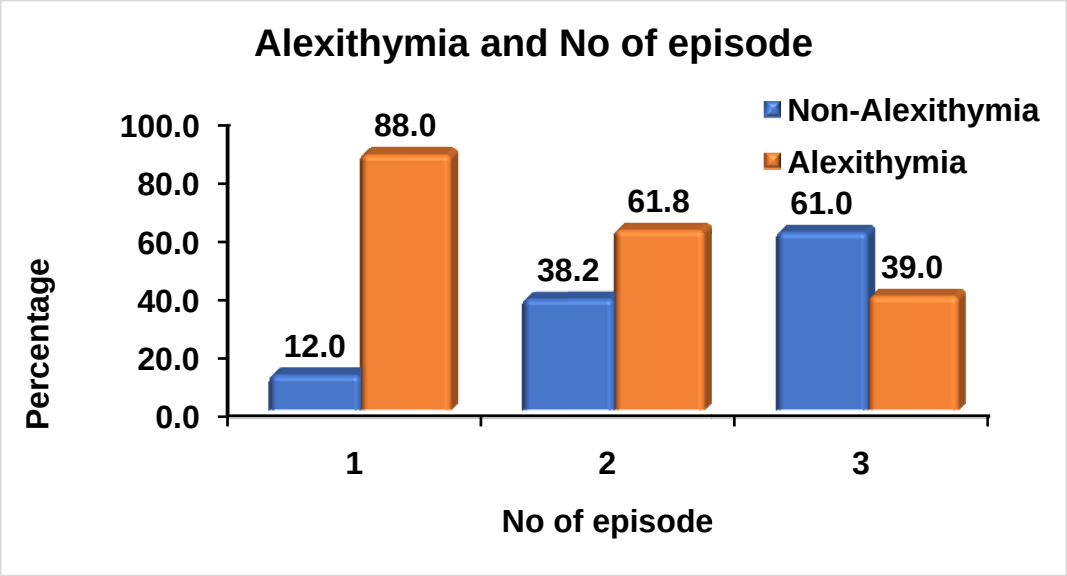
On evaluating the type of family, individuals from joint family 71.1% score more on alexithymia whereas nuclear family contributes 51.6 % which is statistically significant **p 0.05**

F) COMPARING PROPORTIONS OF NUMBER OF EPISODES

TABLE-9

No of episode	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
1	3	12.0	22	88.0	25	100.0
2	13	38.2	21	61.8	34	100.0
3	25	61.0	16	39.0	41	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Trend Chi-Square	15.379	<0.001



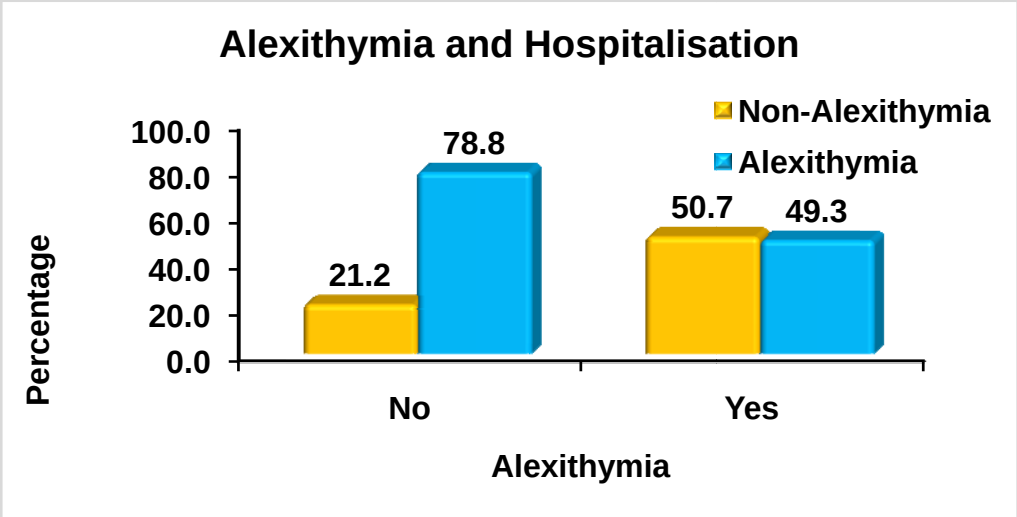
On assessing the number of episodes of depressive illness it is found that first episode of illness contributes 88% of Alexithymia. In chi-square test it was Statistically significant **p < 0.001**

G) COMPARING PROPORTIONS OF HOSPITALIZATIONS

TABLE-10

Hospitalization	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
No	7	21.2	26	78.8	33	100.0
Yes	34	50.7	33	49.3	67	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Pearson Chi-Square	7.973	0.005



On assessing the number of hospitalization for illness alexithymia is found to be higher percentage among non -hospitalized individuals 78.8% compared to hospitalized individuals 49.3%. **which is statistically significant p 0.005.**

H) COMPARING PROPORTIONS OF FAMILY H/O OF PSYCHIATRIC ILLNESS

TABLE-11

FAMILY H/O PSYCHIATRIC ILLNESS	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
No	9	39.1	14	60.9	23	100.0
Yes	32	41.6	45	58.4	77	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Pearson Chi-Square	0.043	0.835

While assessing the proportion of family history it was found that 60.9% of individuals without family h/o of psychiatric illness had alexithymia which is higher than that of individuals with family h/o psychiatric illness.

It is Statistically -non significant.

I) COMPARING PROPORTIONS OF MEDICAL COMORBIDITY

TABLE-12

Medical Comorbidity	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
No	7	29.2	17	70.8	24	100.0
Yes	34	44.7	42	55.3	76	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Pearson Chi-Square	1.828	0.176

On assessing the proportions of medical comorbidity in the study it is found that 70.8% of individuals who scored high on alexithymia had no medical comorbidity whereas 55.3 % had medical comorbidity which is Statistically non –significant.

J) COMPARING PROPORTIONS OF SUICIDAL ATTEMPTS WITH ALEXITHYMIA

TABLE-13

Suicidal attempt	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
Nil	22	45.8	26	54.2	48	100.0
1-2 times	16	37.2	27	62.8	43	100.0
>2 times	3	33.3	6	66.7	9	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	0.930	0.687

On assessing the proportions of suicidal attempts with alexithymia it is found that individuals who attempted more than two times have higher percentage of alexithymia 66.7% whereas it was 54.2 % among individuals with no suicidal attempt but it is statistically non-significant.

K) COMPARING PROPORTIONS OF DURATION OF OCCUPATIONAL IMPAIRMENT

TABLE-14

Duration of occupational impairment	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
Nil	0	.0	2	100.0	2	100.0
1-3 months	1	25.0	3	75.0	4	100.0
4-6 months	29	45.3	35	54.7	64	100.0
>6 months	11	36.7	19	63.3	30	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	2.098	0.598

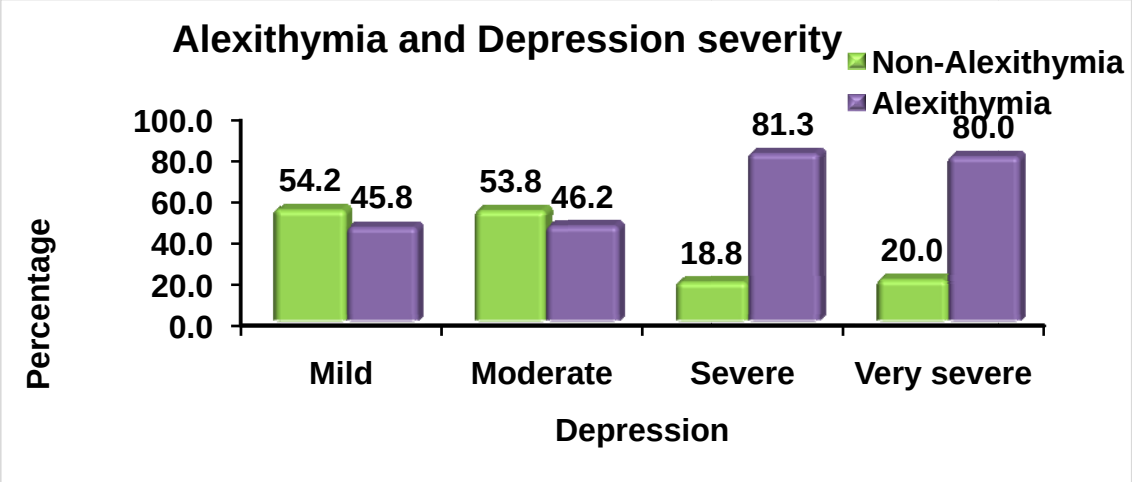
On assessing the proportions of duration of occupational impairment with alexithymia in the study it is found that 75% of alexithymia individuals have duration of occupational impairment for about 1-3 months, 54.7% had impairment for bout 4-6 months and 63.3 % of alexithymia individuals have impairment duration of more than 6 months. But results obtained is Statistically non -significant

L) COMPARING PROPORTIONS OF DEPRESSION SEVERITY USING HAM-D

TABLE-15

Depression severity HAM-D	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
Mild	13	54.2	11	45.8	24	100.0
Moderate	21	53.8	18	46.2	39	100.0
Severe	6	18.8	26	81.3	32	100.0
Very severe	1	20.0	4	80.0	5	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	11.949	0.005



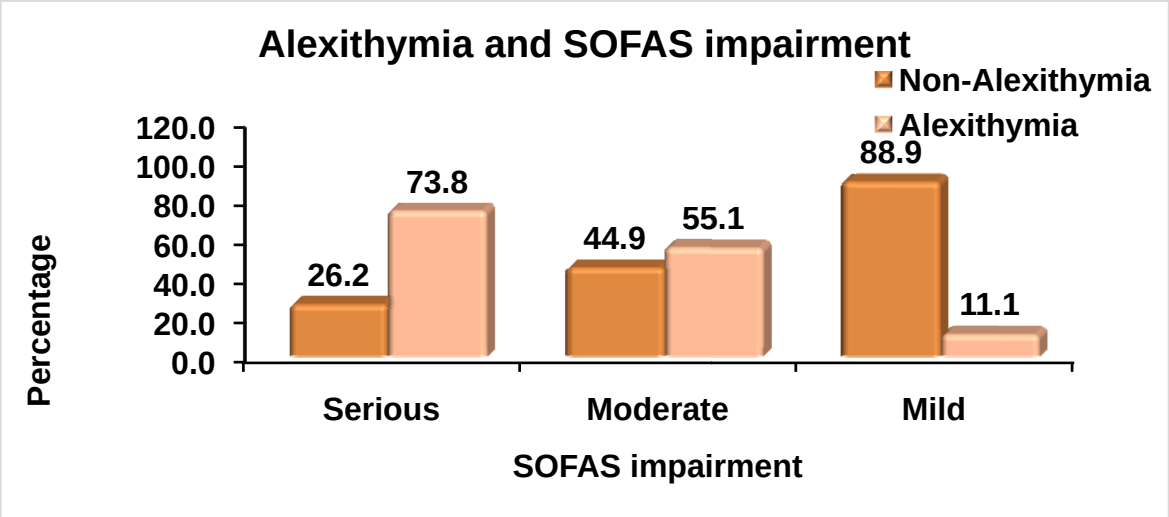
On assessing the proportions of depression severity using HAM-D, More the severity of depression higher the alexithymia scores **which is statistically significant p 0.005**

M) COMPARING PROPORTIONS OF SOCIAL AND OCCUPATIONAL FUNCTIONING USING SOFAS

TABLE-16

SOFAS impairment	Alexithymia					
	Non-Alexithymia		Alexithymia		Total	
	N	%	N	%	N	%
Serious	11	26.2	31	73.8	42	100.0
Moderate	22	44.9	27	55.1	49	100.0
Mild	8	88.9	1	11.1	9	100.0
Total	41	41.0	59	59.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	12.461	0.001



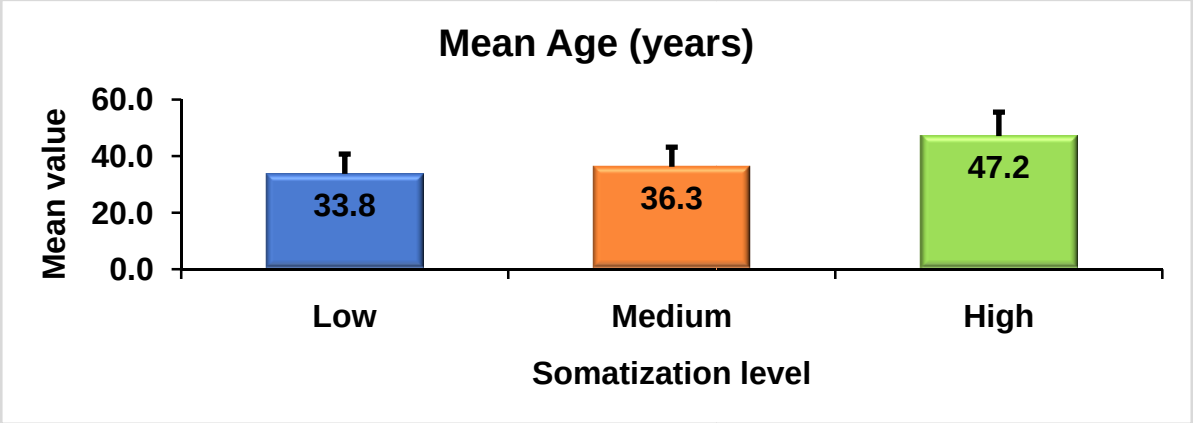
On assessing the proportions of social and occupational functioning using SOFAS, More the severity level of impairment higher the alexithymia scores serious -73.8%; moderate -55.1%; mild -11.1% **which is statistically significant p 0.001**

COMPARATIVE PARAMETERS IN SOMATIZATON

A) COMPARING PROPORTION OF MEAN AGE

TABLE-17

Somatization level	N	Mean	Std. Dev	F-value	p-value
Low	43	33.77	7.010	34.784	<0.001
Medium	14	36.29	6.922		
High	43	47.16	8.432		
Total	100	39.88	9.919		



Somatization score is highest in the individuals of the mean age of 47.16 **Which Is statistically significant- p<0.001**. which indicates in our study population of depression, higher somatization is in accordance with increased age

B) COMPARING PROPORTIONS –OF GENDER

TABLE-18

Gender	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
Male	22	51.2	4	9.8	16	39.0	42	100.0
Female	21	36.2	10	17.2	27	46.6	58	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	4.146	0.390

In our study, even though it is statistically not significant high level of somatization is found in female gender i.e. 46.6% whereas among male's high level of somatization is found only in 39%

C) COMPARING PROPORTIONS –OF MARITAL STATUS

TABLE-19

Marital status	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
Married	16	28.1	8	14.0	33	57.9	57	100.0
Unmarried	24	66.7	4	11.1	8	22.2	36	100.0
Divorce	3	42.9	2	28.6	2	28.6	7	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	15.857	0.002

On comparing marital status High level of somatization is seen in individuals who are married 57% **which is statistically significant p< 0.002**

D) COMPARING PROPORTIONS –OF SOCIO ECONOMIC STATUS

TABLE-20

SES	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
Lower	4	28.6	2	14.3	8	57.1	14	100.0
Upper lower	30	44.1	8	11.8	30	44.1	68	100.0
Lower middle	5	38.5	4	30.8	4	30.8	13	100.0
Upper middle	4	80.0	0	.0	1	20.0	5	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	6.506	0.335

On assessing the socio economic status according to modified Kuppusamy scale somatization is more common in lower class of socio economic status i.e. 57.1% whereas upper middle class family contributes 20%. Prevalence of somatization decreases as socio economic status increases. But the Statistically the arrived result is non- significant.

E) COMPARING PROPORTIONS –OF FAMILY TYPE

TABLE-21

Family type	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
Nuclear	22	35.5	10	16.1	30	48.4	62	100.0
Joint	21	55.3	4	10.5	13	34.2	38	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Pearson Chi-Square	3.773	0.152

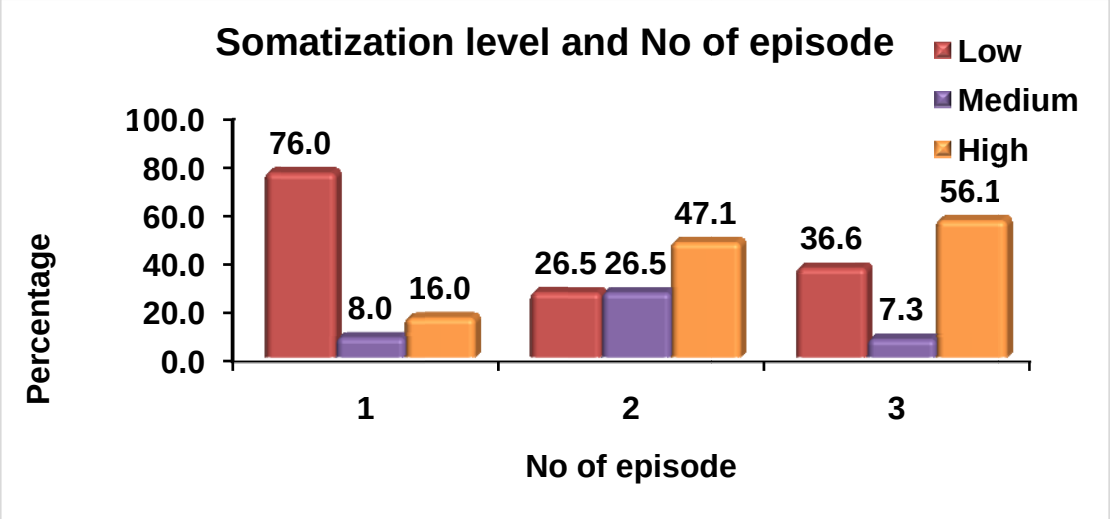
On evaluating the type of family, 48.4 % of individual with nuclear family scored more on high somatization score whereas individuals with joint family contributes 34.2% But it is statistically not significant

F) COMPARING THE PROPORTIONS OF NUMBER OF EPISODES

TABLE-22

No of episode	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
1	19	76.0	2	8.0	4	16.0	25	100.0
2	9	26.5	9	26.5	16	47.1	34	100.0
3	15	36.6	3	7.3	23	56.1	41	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	19.545	<0.001



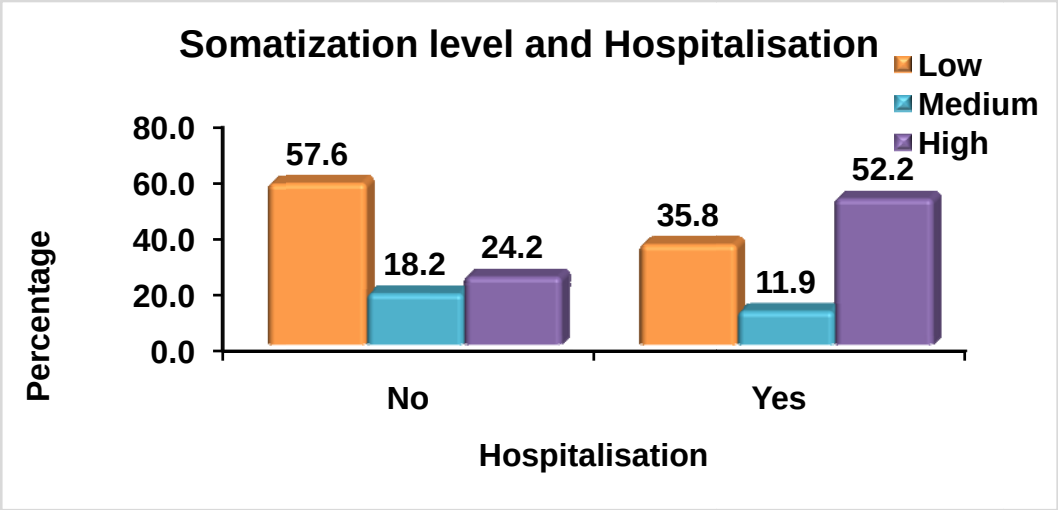
On assessing the number of episodes of depressive illness it is found that higher number of episodes contributes 56.1% of somatization whereas first episode contributes 16.0%in our study. Hence higher level of somatization is seen more in subsequent episodes**Statistically significant p < 0.001**

G) COMPARING PROPORTIONS OF HOSITALIZATION

TABLE-23

Hospitalization	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
No	19	57.6	6	18.2	8	24.2	33	100.0
Yes	24	35.8	8	11.9	35	52.2	67	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	7.266	0.025



On assessing the proportion of hospitalization high level of Somatic score is in hospitalized individuals 52.2% whereas non hospitalized individual contributes 24.2 %. **Which is statistically significant p 0.02**

H) COMPARING PROPORTIONS OF FAMILY H/O OF PSYCHIATRIC ILLNESS

TABLE-24

FAMILY HISTORY	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
No	12	52.2	5	21.7	6	26.1	23	100.0
Yes	31	40.3	9	11.7	37	48.1	77	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	4.008	0.143

While assessing the proportion of family history of psychiatric illness it is found that 48.1% of individuals with family h/o of psychiatric illness had high somatization score whereas it is found in 26.1% without family h/o psychiatric illness. Statistically not significant

I) COMPARING PROPORTIONS OF MEDICAL COMORBIDITY

TABLE-25

Medical Comorbidity	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
No	12	50.0	5	20.8	7	29.2	24	100.0
Yes	31	40.8	9	11.8	36	47.4	76	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	2.951	0.254

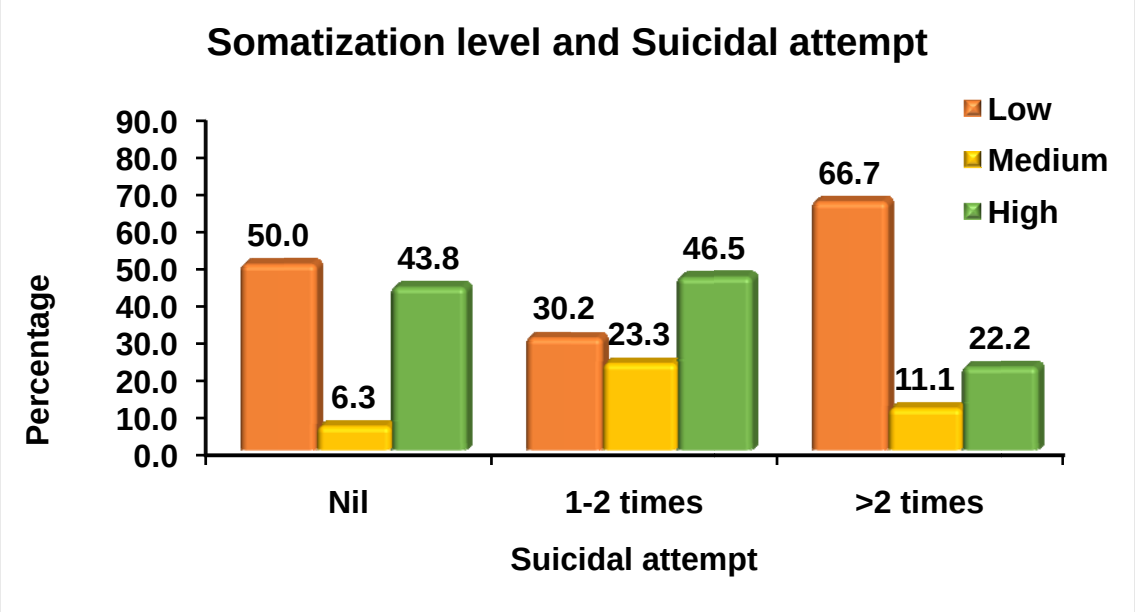
On assessing the proportions of medical comorbidity in the study it is found that 47.4% of individuals with medical comorbidity were having higher level of somatization whereas 40.8% have medical comorbidity with lower level of somatization.which is Statistically non -significant p 0.176. Medical comorbidity is seen more in individuals with high level of somatic score

J) COMPARING PROPORTIONS OF SUICIDAL ATTEMPTS WITH SOMATIZATION

TABLE-26

Suicidal attempt	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
Nil	24	50.0	3	6.3	21	43.8	48	100.0
1-2 times	13	30.2	10	23.3	20	46.5	43	100.0
>2 times	6	66.7	1	11.1	2	22.2	9	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	8.896	0.052



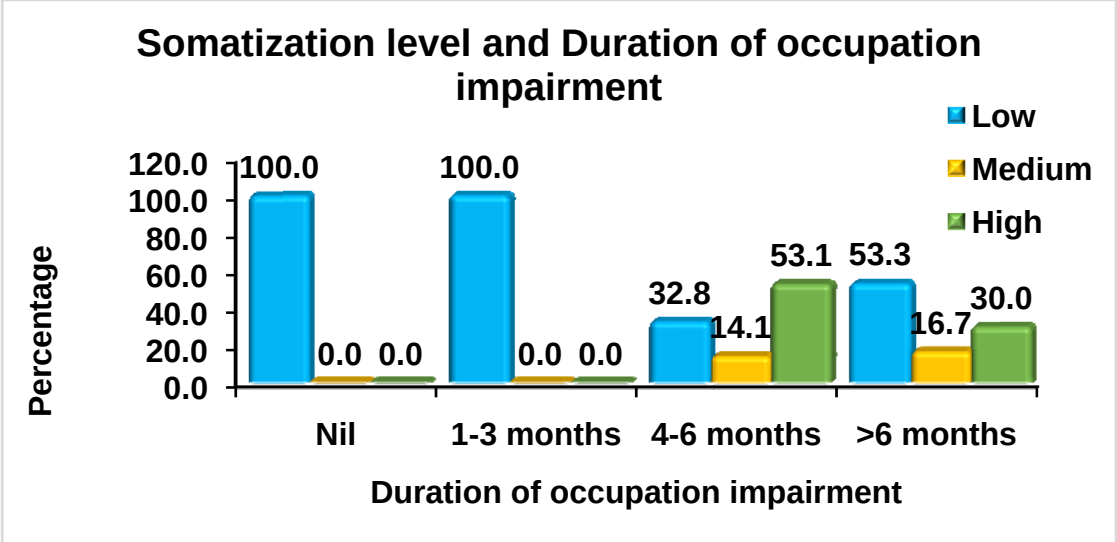
On assessing the proportions of suicidal attempts with somatization it is found that individuals of about 46.5% who attempted (1-2) times have higher level of somatization **score which is statistically significant p 0.052**

K) COMPARING PROPORTIONS OF DURATION OF OCCUPATIONAL IMPAIRMENT

TABLE-27

Duration of occupation impairment	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
Nil	2	100.0	0	.0	0	.0	2	100.0
1-3 months	4	100.0	0	.0	0	.0	4	100.0
4-6 months	21	32.8	9	14.1	34	53.1	64	100.0
>6 months	16	53.3	5	16.7	9	30.0	30	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	11.225	0.037

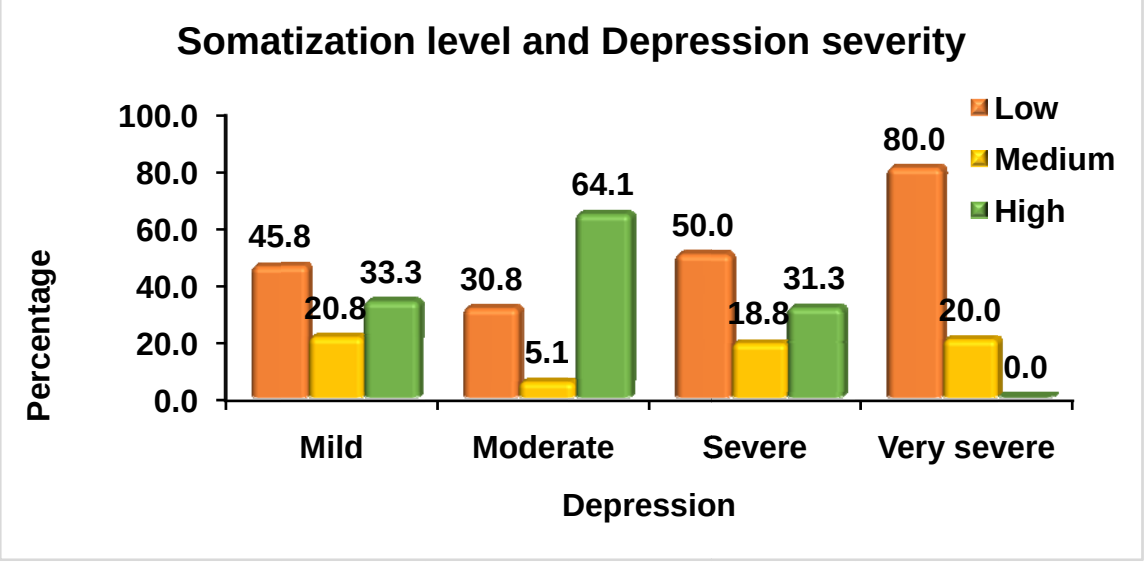


Individuals with Duration of occupational impairment for a period of 4-6 months found to have 53.1% of high somatization score which is **statistically significant with p 0.037**

L) COMPARING PROPORTIONS OF DEPRESSION SEVERITY WITH USING HAM-D TABLE-28

Depression severity	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
Mild	11	45.8	5	20.8	8	33.3	24	100.0
Moderate	12	30.8	2	5.1	25	64.1	39	100.0
Severe	16	50.0	6	18.8	10	31.3	32	100.0
Very severe	4	80.0	1	20.0	0	.0	5	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	14.976	0.012

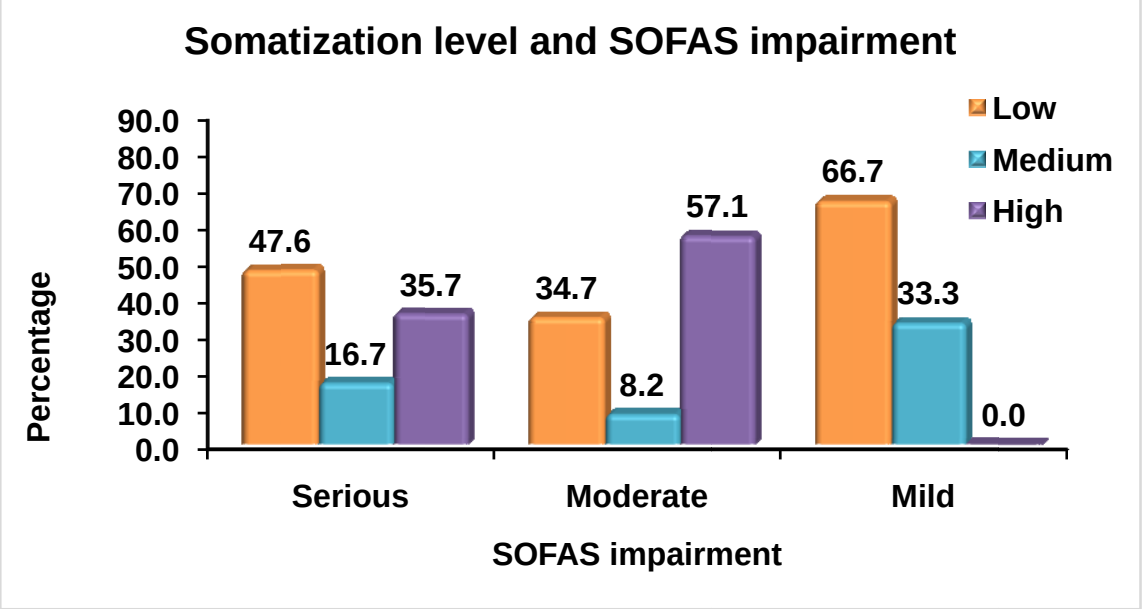


On assessing the proportions of depression severity using HAM-D, individuals with moderate level of depression had higher somatization score 64.1% **which is statistically significant p 0.012.**

M) COMPARING PROPORTIONS OF SOCIAL AND OCCUPATIONAL FUNCTIONING USING SOFAS TABLE-29

SOFAS impairment	Somatization level							
	Low		Medium		High		Total	
	N	%	N	%	N	%	N	%
Serious	20	47.6	7	16.7	15	35.7	42	100.0
Moderate	17	34.7	4	8.2	28	57.1	49	100.0
Mild	6	66.7	3	33.3	0	.0	9	100.0
Total	43	43.0	14	14.0	43	43.0	100	100.0

Chi-Square Test	Value	p-value
Fisher's Exact Test	13.606	0.006



On assessing the proportions of social and occupational functioning using SOFAS with somatization 57.1 % of individuals with high somatization score found to have moderate level of social and occupational impairment, serious impairment-35.7%. **which is statistically significant p 0.006**

DISCUSSION

Alexithymia and somatization is most commonly associated with depression. Even after remission of depression there is certain extent of impairment in the social and occupational functioning in which various factors plays a role. In this study we evaluated 100 participants of depressive illness and tried to estimate the prevalence of alexithymia and somatization in depression individuals using validated tools and tried to explore the impact of alexithymia and somatization in those individuals with depressive disorder pertaining to the social and occupational functioning. And also to compare the various domains related with alexithymia and somatization among depressive individuals.

In our study out of 100 individuals 58 females and 42 males are enrolled based on inclusion and exclusion criteria.

SOCIO DEMOGRAPHIC CHARACTERSTICS AND ILLNESS PAAMETERS IN DEPRESSION RELATED WITH-ALEXITHYMIA

Mean age of alexithymia is found in the mean age of 35.36 years. In earlier studies done by Taycan Oet al found that alexithymia is found in the mean age of **32.41±10.02** among depressed individuals[32]

On investigating the gender proportion our study shows that male gender (78%) scored more on the TAS-20, when compared with female (44.8%)and it is statistically significant p0.001. which is similar to the earlier

study on by Salminen, et al. and Honkalampi.K.et al whohad showed that prevalence of alexithymia is more among men on comparing with females[33,34]

On evaluating the marital status, a study done byHonkalampi K, Hintikka J et al [34] found that alexithymia is more common among divorced and unmarried individuals which is also replicated in our study. High TAS-20 scores were seen more among unmarried individuals 66.5% and divorced individuals 85.7% but the result obtained is not statistically significant in our study.

With respect to economic status earlier studies done by Kokkonen P et al. found that The analyzed indicators of socio-economic status (education, income,employment) showed decreasing TAS-20 sum scores with ascending social status[35]. But our study arrived the result of increasing TAS-20 scores as the economic status increases which is due to the reason that in our study majority of the individuals enrolled were belong to the upper lower and lower class status.

On evaluating the type of family earlier studies demonstrated that type of parenting and family discord has been related as a possible predictor for the development of Alexithymia[36,37]in our study we tried to evaluate the type of family set up as a part of socio demographic evaluation and the result which is obtained is alexithymia is seen more in the joint family (71.1%) compared with nuclear family (51.6%) and the result is statistically significant.

On assessing the number of episodes of depressive illness it is found that first episode of illness contributes 88% of Alexithymia individuals second episode 61.8%, 3rd and more episode constitutes 39.0 % Statistically significant $p < 0.001$

Study done by Rybakowski et al. found that family history of psychiatric illness like substance use disorders, mood disorders are common in alexithymia[38,39]. In our study on assessing the proportion of family history it is found that 60.9% of individuals with high TAS scores is having no family h/o of psychiatric illness whereas and 58.4% of individuals had family h/o of psychiatric illness and the result obtained is not statistically significant.

Medical comorbidity in alexithymia has been investigated in earlier studies and found that diseases pertaining cardiovascular system, gastro intestinal system, central nervous system diseases[40,41]are more common system involved as a comorbidity. In our study On assessing the proportions of medical comorbidity in the study it is found that 70.8% of individuals with no medical comorbidity were having high TAS scores whereas 55.3% of individuals have medical comorbidity which is Statistically non -significant p 0.176.

Taiminen TJ et al in his study found that the measurement of alexithymia does not yield extra information regarding suicide risk[42]In our study the proportions of suicidal attempts with alexithymia it is found that individuals who attempted more than two times have higher TAS-20 scores

66.7% whereas it is 54.2 % among individuals with no suicidal attempt but it is statistically non-significant p 0.68

On assessing the proportions of depression severity using HAM-D, More the severity of depression higher the alexithymia scores which is statistically significant p 0.005 which is replication of earlier study done by Günther,V. et al[45].

SOCIO DEMOGRAPHIC CHARACTERSTICS AND ILLNESS PARAMETERS IN DEPRESSION RELATED WITH-SOMATIZATION

Mean age of somatization is found in the mean age of 47.16 years which is in accordance with previous study[77].

Study done by Kroenke K et al[77]found that in depression somatization is most prevalence in female gender. In our study, even though it is statistically not significant P 0.390 high level of somatization is found in female gender i.e. 46.6% whereas males contribute 39.0%.

On comparing marital status High level of somatization is seen in individuals who are married 57% which is statistically significant p< 0.002 which is accordance with earlier studies done by Katon W, Kirmayer L.J et al.[78,79].

On comparing the socio economic status according to modified Kuppusamy scale somatization is more common in lower class of socio economic status i.e. 57.1% whereas upper middle class family contributes 20%. Prevalence of somatization decreases as socio economic status increases. But

Statistically the arrived result is non- significant p 0.335.which is in accordance with previous study done by kirmayer L et al.[79].On evaluating the type of family, somatization a is found more in nuclear family which contributes 48.4% whereas it is 34.2% in joint family Butthe result obtained is statistically not significant p 0.152

On describing the number of episodes of depressive illness it is found that higher number of episode inindividuals contributes 56.1% of somatization whereas first episode contributes 16.0%in our study. Hence higher level of somatization is seen more in subsequent episodes Statistically significant $p < 0.001$ which is supported by previous study which reflects the same results.Katon W, Lin E et al. [80]

On assessing the proportion of hospitalization high level of somatic score is in hospitalized individuals 52.2% whereas non hospitalized individual contributes 24.2 %. Which is statistically significant p 0.02 which is due to the possible medical comorbidity which requires therapeutic intervention as evidenced by previous studies done by Chandler JD et al.[81]

On evaluating the proportions of medical comorbidity in our study it is found that 47.4% of individuals with medical comorbidity were having higher level of somatization whereas 40.8% have medical comorbidity with lower level of somatization.But the result is Statistically non -significant p 0.176. Medical comorbidity is seen more in individuals with high level of somatic score. Earlier studies established a significant results with medical comorbidity[82,83].

On assessing the proportions of suicidal attempts with somatization it is found that individuals of about 46.5% who attempted (1-2) times have higher level of somatization score which is statistically significant p 0.052 .

On evaluating the proportions of depression severity using HAM-D, individuals with moderate level of depression had higher somatization score 64.1% which is statistically significant p 0.012.

In our study we evaluated the social and occupational functioning using SOFAS among the participants and association of Alexithymia and somatization were individually interpreted and the results obtained is More the severity level of impairment in SOFAS higher the alexithymia scores. serious impairment-73.8%; moderate -55.1%;

mild -11.1% which is statistically significant p 0.001.

Similarly, while assessing the social and occupational functioning using SOFAS with somatization 57.1 % of high somatization score found to have moderate level of social and occupational impairment, serious impairment-35.7%. which is statistically significant p0.006.

As we tried to investigate the alexithymia and somatization and their impacts on social functioning in depression individuals, both individuals with high TAS-20 scores and also individuals with high somatization scores had higher level of impairment n the social and occupational functioning when evaluated using the SOFAS. many domains replicated same results as of the earlier studies and were also statistically significant.

CONCLUSION

This study provides many information which is significant in depression individuals. Since long time alexithymia has been neglected in many countries due to the limited availability of evidence based concepts and also difficulty in identifying this as a separate entity due to lack of tools for evaluating. This study focus on association of hidden concept alexithymia in depression and tried to explore the various domains pertaining to it similarly along with the somatization evaluation makes a comparable approach for the improvement of social and occupational functioning impairment resulting from the depression. This study concludes that alexithymia and somatization are equally associated with depression in which alexithymia is seen more in male gender, married individual, joint family, higher severity of depression, higher number of episodes, non-hospitalized individuals and severe level of social and occupational functioning impairment. Whereas somatization seen more in female gender, married individuals, severe level of depression, frequently hospitalized individuals, higher number of episodes, severe level of social and occupational impairment. This study provides the importance that while treating the individual with depression it is necessary to assess the somatic symptoms and alexithymia scores using appropriate scales as used in this study and monitor the progression during follow up along with treatment protocol can improve the outcome of the disease and also prevent the social functioning impairment thereby improving the quality of life.

LIMITATIONS

1. Study population from the same setting, small sample size. Large sample size and control group needed for generalization of results
2. since our study is a cross sectional study, findings need to be replicated in longitudinal studies.
3. Many studies for correlation of the results were used from European countries and Scandinavian countries because of the limitation of studies related to alexithymia in Indian set up
4. For assessing the alexithymia in depression we have used TAS-20 scales in English language, it would have been better if it is used in translated version. But only few language versions available so far in India (hindi, kannada)
5. Clear cut definition of somatization has not been established it is quite often this term somatization used for many somatoforms related disorders interchangeably for convenience and diagnostic aspects.
6. Social and occupational functioning impairment due to other comorbidities has been not considered which may be a confounding factor in this study.
7. Treatment adherence in previous episodes and current episodes of depression are not considered in this study.

FUTURE DIRECTIONS

Many studies insisted inconsistencies on methodology and results in epidemiological studies related with alexithymia, somatization and depression. Therefore, there is a need for prospective and systematic studies which has consistent study designs and results. Findings from previous study shown that alexithymia is a stable trait, but when an individual is amounted to psychological /physical factors. Studies in future can overcome this state of dilemma by assessing alexithymia in the same individual repeatedly across various standardized time periods. Measurement of confounding factors like negative affect should be assessed simultaneously in order to strengthen the study. Future directions should focus on Neuroimaging and genetic related research that may provide us new insights and also to understand the interplay of somatization and alexithymia in depression individuals.

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INFORMATION OF PARTICIPANTS

TITLE- "ALEXITHYMIA AND SOMATISATION IN PATIENTS WITH DEPRESSION AND THEIR IMPACT ON SOCIAL FUNCTIONING"

Principal Investigator: Dr. SANJAY.B
Name of Participant:
Site: Institute of Mental Health, Chennai

You are invited to take part in this research. The information in this document is meant to help you decide whether or not to take part. Please feel free to ask if you have any queries or concerns.

What is the purpose of research?

Impairment in social functioning are common in depression disorder. Alexithymia is marked by difficulties in verbally describing affect and in differentiating mental states from bodily sensation and alexithymia is highly associated with depression Somatization is the experience of bodily symptoms with no or no sufficient physical cause for them with presumed psychological causation it is also associated with depression. hence this study is to find out the contribution and impact of alexithymia and somatization to social functioning in consecutive sample of depression patients at Institute of Mental Health, Chennai. We have obtained permission from the Institutional Ethics Committee.

The study design

Patients with depression diagnosed as per ICD 10 classification are considered for the study. Informed consent is taken from the patients. Later100 consecutive patients attending the out-patient of Institute of Mental Health, Chennai are taken up as study subjects. Impact of alexithymia and somatization on social functioning in depression patient is studied

Study Procedures

Data's from the patient's samples of depression attending the outpatient at institute of mental health are taken and statistically analyzed to get the results of impact of alexithymia and somatization on social functioning in depression. They are chosen for the study if they are physically stable after taking an informed consent. later standardassessment tools i.e. HAMILTON RATING SCALE for depression, TORENTO ALEXITHYMIA SCALE for alexithymia, PHQ-15 SOMATIC SYMPTOMS SEVERITYRATING SCALE, SOCIAL AND OCCUPATION FUNCTIONING ASSESSMENT SCALE for social function assessment.

Confidentiality of the information obtained from you

You have the right to confidentiality regarding the privacy of your medical information (personal details, results of physical examinations, investigations, and your medical history). By signing this document, you will be allowing the research team investigators, other study personnel, Institutional Ethics Committee and any person or agency required by law like the Drug Controller General of India to view your data, if required. The information from this study, if published in scientific journals or presented at scientific meetings,
will not reveal your identity.

How will your decision to not participate in the study affect you?

Your decision not to participate in this research study will not affect your medical care or your relationship with the investigator or the institution. You will be taken care of and you will not lose any benefits to which you are entitled.

Can you decide to stop participating in the study once you start?

The participation in this research is purely voluntary and you have the right to withdraw from this study at any time during the course of the study without giving any reasons. However, it is advisable that you talk to the research team prior to discontinuing form the study.

Signature of Investigator

Signature of Participant

Signature of the Guardian

Date

Date

ஆய்வு தகவல் தாள்

ஆய்வின் தலைப்பு : மன அழுத்தம் பிணியாளர்களின் சமூக செயல்பாடு திறனிற்கு உடல் சார்ந்த உளநோய் மற்றும் அலெக்ஸித்தைமியா (Alexithymia) -வின் தாக்கம்.

ஆய்வாளரின் பெயர் : மரு.போ.சஞ்ஜய்

பங்கு கொள்பவரின் பெயர் :

மருத்துவ நிலையம் : அரசு மனநல காப்பகம், சென்னை

ஆய்வின் நோக்கம் :

மன அழுத்தம் பிணியாளர்களிடம் சமூக செயல்பாடு திறன் வலுக்குறைவாக உள்ளது. அலெக்ஸிதைமியா என்னும் அறிகுறியும், உடல்சார்ந்த உளநோய் நினைப்பும் மன அழுத்தம் பிணியாளர்களிடம் தென்படுகிறது. நமது ஆய்வின் நோக்கம் சமூக செயல்பாடு திறன் குறைவுள்ள மன அழுத்தம் பிணியாளர்களுக்கு அலெக்ஸித்தைமியா மற்றும் உடல் சார்ந்த உளநோய் எவ்வித அளவிற்கு தாக்கம் ஏற்பட வைக்கிறது என்பதை ஆராய்வதாகும்

செய்முறை விளக்கம் :

இந்த ஆய்வு மனநல காப்பகத்தில் புறநோயாளிகள் பிரிவில் நடைபெறுகிறது இந்த ஆய்வில் பிணியாளர்களின் முழு சம்மதத்துடனும் உட்படுத்தபடுவார்கள். இவர்களுக்கு HAM-D, TAS, SSAS, OSFS போன்ற கேள்வி தாள் மூலம் மதிப்பீடு செய்யப்படும்.

ஆய்வினால் தாங்கள் அடையும் பயன்கள் :

சுய தீங்கிற்கான ஆபத்து காரணிகள் தங்களிடம் கண்டறியப் பட்டால் அதற்குரிய சிகிச்சை தங்களுக்கு அளிக்கப்படும்.

தகவலின் இரகசிய தன்மை :

தங்களுடைய சுயவிளக்கம், மருத்துவக் குறிப்புகள் மற்றும் மருத்துவ சோதனை அறிக்கை அனைத்தும் ரகசியமாக வைப்பதற்கு தனியுரிமை அளிக்கப்படும். இதன் முடிவுகளை வெளியிடும் போதோ அல்லது ஆய்வின் போதோ தங்களது பெயரையோ, அடையாளங்களையோ வெளியிடமாட்டோம் என்பதையும் தெரிவித்துக்கொள்கிறோம்.

இந்த ஆய்வில் தாங்கள் பங்கேற்காவிட்டாலும் தங்களுடைய மருத்துவ உதவியில் எந்தவொரு பின்விளைவுகளும் ஏற்படாது.

இந்த ஆய்வில் பங்கேற்பது தங்களுடைய விருப்பத்தின் பேரில் தான் மேலும் நீங்கள் எந்நேரமும் இந்த ஆய்விலிருந்து பின்வாங்கலாம் என்பதையும் தெரிவித்துக்கொள்கிறேன்.

ஆய்வாளரின் கையொப்பம் பங்கேற்பாளர் கையொப்பம்

நாள் : நாள் :

INFORMED CONSENT FORM

(This is only a guideline – Relevant changes to be made as per the study requirements)

Title of the study:" ALEXITHYMIA AND SOMATISATION IN PATIENTS WITH DEPRESSION AND THEIR IMPACT ON SOCIAL FUNCTIONING AT INSTITUTE OF MENTAL HEALTH"

Name of the Participant: _____.

Name of the Principal (Co-Investigator): _ Dr. SANJAY.B A_____.

Name of the Institution: INSTITUTE OF MENTAL HEALTH

Name and address of the sponsor / agency (ies) (if any):_No_

Documentation of the informed consent

I _____ have read the information in this form (or it has been read to me). I was free to ask any questions and they have been answered. I am over 18 years of age and, exercising my free power of choice, hereby give my consent to be included as a participant in "ALEXITHYMIA AND SOMATISATION IN PATIENTS WITH DEPRESSION AND THEIR IMPACT ON SOCIAL FUNCTIONING AT INSTITUTE OF MENTAL HEALTH "

1. I have read and understood this consent form and the information provided to me.
2. I have had the consent document explained to me.
3. I have been explained about the nature of the study.
4. I have been explained about my rights and responsibilities by the investigator.
5. I have been informed the investigator of all the treatments I am taking or have taken in the past _____ months including any native (alternative) treatment.
6. I have been advised about the risks associated with my participation in this study*****

7. I have not participated in any research study within the past _____month(s). *****
8. I have not donated blood within the past _____ months—Add if the study involves extensive blood sampling. *****
9. I am aware of the fact that I can opt out of the study at any time without having to give any reason and this will not affect my future treatment in this hospital. *****
10. I am also aware that the investigator may terminate my participation in the study at any time, for any reason, without my consent. *****
11. I hereby give permission to the investigators to release the information obtained from me as result of participation in this study to the sponsors, regulatory authorities, Govt. agencies, and IEC. I understand that they are publicly presented.
12. I have understood that my identity will be kept confidential if my data are publicly presented
13. I have had my questions answered to my satisfaction.
14. I have decided to be in the research study.

I am aware that if I have any question during this study, I should contact the investigator. By signing this consent form I attest that the information given in this document has been clearly explained to me and understood by me, I will be given a copy of this consent document.

For adult participants:

Name and signature / thumb impression of the participant (or legal representative if participant incompetent)

Name _____ Signature_____ Date_____

Name and Signature of impartial witness (required for illiterate patients):

Name _____ Signature_____ Date_____

Address and contact number of the impartial witness:

Name and Signature of the investigator or his representative obtaining consent:

Name _____ Signature_____ Date_____

Name and Signature of the investigator or his representative obtaining consent:

Name _____ Signature_____ Date_____

ஆய்வு ஒப்புதல் படிவம்

ஆய்வின் தலைப்பு : மன அழுத்தம் பிணியாளர்களின் சமூக செயல்பாடு திறனிற்கு உடல் சார்ந்த உளநோய் மற்றும் அலெக்ஸித்தைமியா (Alexithymia) -வின் தாக்கம்.

ஆய்வாளரின் பெயர் : மரு.போ.சஞ்ஜய்

பங்கு கொள்பவரின் பெயர்

மருத்துவ நிலையம் : அரசு மனநல காப்பகம், சென்னை

_____எனும் நான் எனக்கு கொடுக்கப்பட்ட தகவல் தாளினை படித்து புரிந்துகொண்டேன். நான் 18 வயதை கடந்திருப்பதால் என்னுடைய சுய நினைவுடனும் மற்றும் முழு சுதந்திரத்துடனும் இந்த ஆய்வில் என்னைச் சேர்த்துக்கொள்ள சம்மதிக்கிறேன்.

நான் எனக்கு கொடுக்கப்பட்ட தகவல் தாளினை படித்து புரிந்துகொண்டேன்.

எனக்கு இந்த ஆய்வின் ஒப்புதல் படிவம் விளக்கப்பட்டது.

எனக்கு இந்த ஆய்வின் நோக்கமும், விவரங்களும் விளக்கப்பட்டது.

எனக்கு என்னுடைய உரிமைகளை பற்றி விளக்கப்பட்டது.

நான் இதற்கு முன்பு எடுத்துக்கொண்ட அனைத்து மருத்துவ முறைகளைப் பற்றி தெரிவித்திருக்கிறேன்.

இந்த ஆய்வில் இருந்து நான் எந்நேரமும் பின் வாங்கலாம் என்பதையும் அதனால் எந்த பாதிப்பும் ஏற்படாது என்பதையும் நான் புரிந்துகொண்டேன்.

என்னை பற்றிய எந்த தகவல்களும் அடையாளமும் வெளியிடப்படமாட்டாது என்பதை நான் புரிந்துகொண்டேன்

என்னுடைய முழு சுதந்திரத்துடன் இந்த ஆய்வில் என்னைச் சேர்த்துக்கொள்ள சம்மதிக்கிறேன்.

பங்கேற்பாளர் பெயர் மற்றும் கையொப்பம் ..... தேதி.....

ஆய்வாளரின் பெயர் மற்றும் கையொப்பம் ..... தேதி.....

Hamilton Depression Rating Scale (HDRS)

Reference: **Hamilton M. A rating scale for depression. J Neurol Neurosurg Psychiatry 1960; 23:56–62**

Rating Clinician-rated

Administration time 20–30 minutes

range (or in clinical remission), while a score of 20 or higher (indicating at least moderate severity) is usually required for entry into a clinical trial.

Main purpose to assess severity of, and change in,depressive symptoms

Population Adults

Commentary

The HDRS (also known as the Ham-D) is the most widely used clinician-administered depression assessment scale. The original version contains 17 items ($HDRS_{17}$) pertaining to symptoms of depression experienced over the past week. Although the scale was designed for completion after an unstructured clinical interview, there are now semi-structured interview guides available. The HDRS was originally developed for hospital inpatients, thus the emphasis on melancholic and physical symptoms of depression. A later 21-item version ($HDRS_{21}$) included 4 items intended to subtype the depression, but which are sometimes, incorrectly, used to rate severity. A limitation of the HDRS is that atypical symptoms of depression (e.g., hypersomnia, hyperphagia) are not assessed (see SIGH-SAD, page 55).

Scoring

Method for scoring varies by version. For the $HDRS_{17}$, a score of 0–7 is generally accepted to be within the normal

Versions

The scale has been translated into a number of languages including French, German, Italian, Thai, and Turkish. As well, there is an Interactive Voice Response version (IVR), a Seasonal Affective Disorder version (SIGH-SAD, see page 55), and a Structured Interview Version (HDS-SIV). Numerous versions with varying lengths include the HDRS17, HDRS21, HDRS29, HDRS8, HDRS6, HDRS24, and HDRS7 (see page 30).

Additional references

Hamilton M. Development of a rating scale for primary depressive illness. Br J Soc Clin Psychol 1967; 6(4):278–96.

Williams JB. A structured interview guide for the Hamilton Depression Rating Scale. Arch Gen Psychiatry 1988; 45(8):742–7.

Address for correspondence

Hamilton Depression Rating Scale (HDRS)

PLEASE COMPLETE THE SCALE BASED ON A STRUCTURED INTERVIEW

Instructions: for each item select the one “cue” which best characterizes the patient. Be sure to record the answers in the appropriate spaces (positions 0 through 4).

1 DEPRESSED MOOD *(sadness, hopeless, helpless, worthless)*

- 0 |__| Absent.
- 1 |__| These feeling states indicated only on questioning.
- 2 |__| These feeling states spontaneously reported verbally.
- 3 |__| Communicates feeling states non-verbally, i.e. through facial expression, posture, voice and tendency to weep.
- 4 |__| Patient reports virtually only these feeling states in his/her spontaneous verbal and non-verbal communication.

2 FEELINGS OF GUILT

- 0 |__| Absent.
- 1 |__| Self-reproach, feels he/she has let people down.
- 2 |__| Ideas of guilt or rumination over past errors or sinful deeds.
- 3 |__| Present illness is a punishment. Delusions of guilt.
- 4 |__| Hears accusatory or denunciatory voices and/or experiences threatening visual hallucinations.

3 SUICIDE

0 |__| Absent.
1 |__| Feels life is not worth living.
2 |__| Wishes he/she were dead or any thoughts of possible death to self.
3 |__| Ideas or gestures of suicide.
4 |__| Attempts at suicide (any serious attempt rate 4).

4 INSOMNIA: EARLY IN THE NIGHT

0 |__| No difficulty falling asleep.
1 |__| Complains of occasional difficulty falling asleep, i.e. more than ½ hour.
2 |__| Complains of nightly difficulty falling asleep.

5 INSOMNIA: MIDDLE OF THE NIGHT

0 |__| No difficulty.
1 |__| Patient complains of being restless and disturbed during the night.
2 |__| Waking during the night – any getting out of bed rates 2 (except for purposes of voiding).

6 INSOMNIA: EARLY HOURS OF THE MORNING

0 |__| No difficulty.
1 |__| Waking in early hours of the morning but goes back to sleep.
2 |__| Unable to fall asleep again if he/she gets out of bed.

7 WORK AND ACTIVITIES

0 |__| No difficulty.
1 |__| Thoughts and feelings of incapacity, fatigue or weakness related to activities, work or hobbies.
2 |__| Loss of interest in activity, hobbies or work – either directly reported by the patient or indirect in listlessness, indecision and vacillation (feels he/she has to push self to work or activities).
3 |__| Decrease in actual time spent in activities or decrease in productivity. Rate 3 if the patient does not spend at least three hours a day in activities (job or hobbies) excluding routine chores.
4 |__| Stopped working because of present illness. Rate 4 if patient engages in no activities except routine chores, or if patient fails to perform routine chores unassisted.

8 RETARDATION (slowness of thought and speech, impairedability to concentrate, decreased motor activity)

0 |__| Normal speech and thought.
1 |__| Slight retardation during the interview.
2 |__| Obvious retardation during the interview.
3 |__| Interview difficult.
4 |__| Complete stupor.

9 AGITATION

0 |__| None.
1 |__| Fidgetiness.
2 |__| Playing with hands, hair, etc.
3 |__| Moving about, can't sit still.
4 |__| Hand wringing, nail biting, hair-pulling, biting of lips.

10 ANXIETY PSYCHIC

0 |__| No difficulty.
1 |__| Subjective tension and irritability.
2 |__| Worrying about minor matters.
3 |__| Apprehensive attitude apparent in face or speech.
4 |__| Fears expressed without questioning.

11 ANXIETY SOMATIC (physiological concomitants of anxiety) such as:

gastro-intestinal – dry mouth, wind, indigestion, diarrhea, cramps, belching
cardio-vascular – palpitations, headaches
respiratory – hyperventilation, sighing
urinary frequency
sweating

0 |__| Absent.
1 |__| Mild.
2 |__| Moderate.
3 |__| Severe.
4 |__| Incapacitating.

12 SOMATIC SYMPTOMS GASTRO-INTESTINAL

0 |__| None.
1 |__| Loss of appetite but eating without staff encouragement. Heavy feelings in abdomen.
2 |__| Difficulty eating without staff urging. Requests or requires laxatives or medication for bowels or medication for gastro-intestinal symptoms.

13 GENERAL SOMATIC SYMPTOMS

0 |__| None.
1 |__| Heaviness in limbs, back or head. Backaches, headaches, muscle aches. Loss of energy and fatigability.
2 |__| Any clear-cut symptom rates 2.

14 GENITAL SYMPTOMS (symptoms such as loss of libido, menstrual disturbances)

0 |__| Absent.
1 |__| Mild.
2 |__| Severe.

15 HYPOCHONDRIASIS

0 |__| Not present.
1 |__| Self-absorption (bodily).
2 |__| Preoccupation with health.
3 |__| Frequent complaints, requests for help, etc.
4 |__| Hypochondriacal delusions.

16 LOSS OF WEIGHT *(RATE EITHER a OR b)*

a) According to the patient:	**b) According to weekly measurements:**
0 |__| No weight loss.	0 |__| Less than 1 lb weight loss in week.
1 |__| Probable weight loss associated with present illness.	1 |__| Greater than 1 lb weight loss in week.
2 |__| Definite (according to patient) weight loss.	2 |__| Greater than 2 lb weight loss in week.
3 |__| Not assessed.	3 |__| Not assessed.

17 INSIGHT

0 |__| Acknowledges being depressed and ill.
1 |__| Acknowledges illness but attributes cause to bad food, climate, overwork, virus, need for rest, etc.
2 |__| Denies being ill at all.

Total score: |__|__|

TORONTO ALEXITHYMIA SCALE (TAS-20)

A-STRONGLY DISAGREE B- DISAGREE C- NEITHER AGREE/ NOR DISAGREE D-AGREE E-STRONGLY AGREE

DIFFICULTY IN IDENTIFYING FEELING

1- Iamoften confused about what emotion I am feeling

A	B	C	D	E

2- I have personal sensation that even doctors don't understand

A	B	C	D	E

3- when I am upse ; I don't know if I am sad /frightened / angry

A	B	C	D	E

4- I am often puzzled by sensation in my body

A	B	C	D	E

5- I have feeling that I can't quite identify

A	B	C	D	E

6- I don't know what is going on inside my mind

A	B	C	D	E

7- I often don't know why I am angry

A	B	C	D	E

DIFFICULTY IN COMMUNICATING FEELING

1 – It is difficult for me to find the right word my words to my feeling

A	B	C	D	E

2- ***I am able to describe my feelings easily (-ve key)***

A	B	C	D	E

3- I find it hard to describe how I feel about people

A	B	C	D	E

4- People tell me to do describe my feeling more

A	B	C	D	E

5- It is difficult for me to describe my innermost feeling even to my close friend

A	B	C	D	E

DIFFICULTY IN EXTERNALLY ORIENTED THINKING

1- ***I Prefer to analyze problemrather than describing them (-ve key)***

A	B	C	D	E

2- I prefer to just let things happen rather than to understand why they turned out that way

A	B	C	D	E

3- <u>Being in touch with emotion is essential (-ve key)</u>

A	B	C	D	E

4- I prefer talking to people about their daily activities rather than their feeling

A	B	C	D	E

5- I prefer to watch light entertainment shows rather than psychological dramas

A	B	C	D	E

6- <u>I can feel close to someone even in moment of silence (-ve key)</u>

A	B	C	D	E

7- <u>I find examination of my feelings useful in solving personal problems (-ve key)</u>

A	B	C	D	E

8- Looking for hidden meaning in movies/plays distracts from their enjoyment

A	B	C	D	E

5 POINT LIKERT SCALE
5 ITEMS NEGATIVELY KEYED

TOTAL SCORE RANGE 20-100
SCORES

<51 – NON ALEXITHYMIA
52-60- POSSIBLE ALEXITHYMIA
>60- ALEXITHYMIA

<u>INDIVIDUAL SCORE RESULT</u>

PHQ-15 SOMATIC SYMPTOM SEVERITY SCALE

The APA is offering a number of “emerging measures” for further research and clinical evaluation. These patient assessment measures were developed to be administered at the initial patient interview and to monitor treatment progress. They should be used in research and evaluation as potentially useful tools to enhance clinical decision-making and not as the sole basis for making a clinical diagnosis. Instructions, scoring information, and interpretation guidelines are provided; further background information can be found in DSM-5. The APA requests that clinicians and researchers provide further data on the instruments’ usefulness in characterizing patient status and improving patient care at http://www.dsm5.org/Pages/Feedback-Form.aspx.

Measure: LEVEL 2—Somatic Symptom—Adult Patient (adapted from the Patient Health Questionnaire Physical Symptoms [PHQ-15]) Rights granted: This measure can be reproduced without permission by researchers and by clinicians for use with their patients. Rights holder: This measure was adapted from the Patient Health Questionnaire Physical Symptoms (PHQ-15]), which is in the public domain (http://www.phqscreeners.com/instructions/instructions.pdf). The original measure was developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. To request permission for any other use beyond what is stipulated above, contact: The measure is in the public domain and can be used without permission.

Name: _____ Age: ____ Sex: θ Male θ Female

Date: _____ If the measure is being completed by an informant, what is your relationship with the individual receiving care? _____

					Clinician Use
During the past 7 days, how much have you been bothered by any of the following problems?					**Item Score**
		Not bothered at all (0)	**Bothered a little (1)**	**Bothered a lot (2)**	
1.	Stomach pain	❑	❑	❑	
2.	Back pain	❑	❑	❑	
3.	Pain in your arms, legs, or joints (knees, hips, etc.)	❑	❑	❑	
4.	Menstrual cramps or other problems with your periods *WOMEN ONLY*	❑	❑	❑	
5.	Headaches	❑	❑	❑	
6.	Chest pain	❑	❑	❑	
7.	Dizziness	❑	❑	❑	
8.	Fainting spells	❑	❑	❑	
9.	Feeling your heart pound or race	❑	❑	❑	
10.	Shortness of breath	❑	❑	❑	
11.	Pain or problems during sexual intercourse	❑	❑	❑	
12.	Constipation, loose bowels, or diarrhea	❑	❑	❑	
13.	Nausea, gas, or indigestion	❑	❑	❑	
14.	Feeling tired or having low energy	❑	❑	❑	
15.	Trouble sleeping	❑	❑	❑	
				Total/Partial Raw Score:	
				Prorated Total Raw Score: (if 1-3 items left unanswered)	

Adapted from Physical Symptoms (PHQ-15) for research and evaluation purposes.

SCORING AND INTERPRETATION

Each item on the PHQ-15 is rated on a 3-point scale (0=not bothered at all; 1=bothered a little; 2= bothered a lot). The total score can range from 0 to 30, with higher scores indicating greater severity of somatic symptoms.

The clinician is asked review the score of each item on the measure during the clinical interview and indicate the raw score for each item in the section provided for "Clinician Use." The raw scores on the 15 items should be summed to obtain a total raw score and interpreted using the Interpretation Table for the PHQ-15 Somatic Symptom Severity scale below:

Interpretation Table for the PHQ-15 Somatic Symptom Severity Scale Levels of Somatic Symptom Severity PHQ-15 Score Minimal 0-4 Low 5-9 Medium 10-14 High 15-30 Note: If 4 or more items are left unanswered on the PHQ-15 (i.e., more than 25% of the total items are missing) the total score should not be calculated.

As such, the individual (or informant) should be encouraged to complete all of the items on the measure. If 1 to 3 items are left unanswered, you should prorate the raw score by first summing scores of items that were answered to get a partial raw score. Next, multiply the partial raw score by the total number of items on the measure (i.e., 15). Finally, divide the value by the number of items that were actually answered to obtain the prorated total raw score.

Prorated Score = (Partial Raw Score x number of items on the PHQ-15)

Number of items that were actually answered If the result is a fraction, round to the nearest whole number. The prorated total raw score should be interpreted using the Interpretation Table for the PHQ-15 Somatic Symptom Severity scale above.

SOCIAL AND OCCUPATIONAL FUNCTIONING ASSESSMENT SCALE (SOFAS)

The SOFAS is a new scale that differs from the Global Assessment of Functioning (GAF) Scale in that it focuses exclusively on the individual's level of social and occupational functioning and is not directly influenced by the overall severity of the individual's psychological symptoms. Also in contrast to the GAF Scale, any impairment in social and occupational functioning that is due to general medical conditions is considered in making the SOFAS rating. The SOFAS is usually used to rate functioning for the current period (i.e., the level of functioning at the time of the evaluation). The SOFAS may also be used to rate functioning for other time periods. For example, for some purposes it may be useful to evaluate functioning for the past year (i.e., the highest level of functioning for at least a few months during the past year). Consider social and occupational functioning on a continuum from excellent functioning to grossly impaired functioning. Include impairments in functioning due to physical limitations, as well as those due to mental impairments. To be counted, impairment must be a direct consequence of mental and physical health problems; the effects of lack of opportunity and other environmental limitations are not to be considered.

NOTE:

The rating of overall psychological functioning on a scale of 0–100 was operationalized by Luborsky in the Health-Sickness Rating Scale. (Luborsky L: "Clinicians' Judgments of Mental Health." Archives of General Psychiatry 7:407–417, 1962).

Spitzer and colleagues developed a revision of the Health-Sickness Rating Scale called the Global Assessment Scale (GAS) (Endicott J, Spitzer RL, Fleiss JL, et al.: "The Global Assessment Scale: A Procedure for Measuring Overall Severity of Psychiatric Disturbance." Archives of General Psychiatry 33:766–771, 1976).

The SOFAS is derived from the GAS and its development is described in Goldman HH, Skodol AE, Lave TR: "Revising Axis V for DSM-IV: A Review of Measures of Social Functioning." American Journal of Psychiatry 149:1148–1156, 1992.

Code (Note: Use intermediate codes when appropriate, e.g., 45, 68, 72.)

100 Superior functioning in a wide range of activities.

| **91 90** Good functioning in all areas, occupationally and socially effective

| **81 80**No more than a slight impairment in social, occupational, or school functioning (e.g., infrequent interpersonal conflict, temporarily falling behind in schoolwork).

| **71 70**Some difficulty in social, occupational, or school functioning, but generally functioning well, has some meaningful interpersonal relationships.

| **61 60** Moderate difficulties in social, occupational, or school functioning (e.g., few friends, conflicts with peers or co-workers).

| **51 50**Serious impairments in social, occupational, or school functioning (e.g., no friends, unable to keep a job).

| **41 40**Major impairments in several areas, such as work or school, family relations friends, neglects family, and is unable to work; child frequently beats up younger children, is defiant at home, and is failing at school).

| **31 30** Inability to function in almost all areas (e.g., stays in bed all day; no job, home, or friends). | 21 20 Occasionally fails to maintain minimal personal hygiene; unable to function independently.

| **11 10**Persistent inabilities to maintain minimal personal hygiene. Unable to function without harming self or others or without considerable external support (e.g., nursing care and supervision).

| **1 0** Inadequate information.

SOCIODEMOGRAPHIC PROFILE

 PARTICIPANT NO -

 OP NO -

 IP NO -

 NAME -

 AGE -

 SEX -

 EDUCATION -

 OCCUPATION -

 DURATION OF UMEMPLOYED IF -

 MARIETAL STATUS -

 ECONOMIC STATUS -

 ADDRESS -

 RELIGION -

 NATIONALITY -

 INFORMANT -

 FAMILY -

 INCOME -

 INCOME - -

 HOUSING -

 DOMICILE -

 PROPERTY LOSS -

 DEBT` -

FAMILY DETAILS

- SPOUSE NAME
- SPOUCE OCCUPATION
- SPOUSE EDUCATION STATUS
- NO OF CHILDRENS
- EDUCATION STATUS OF CHILDRENS
- MODE OF EDUCATION PREVAILING

ILLNESS PARAMETERS - GENERAL

- AGE OF ONSET
- TOTAL DURATION
- NO.OF.EPISODES
- NO.OF.HOSPITALISATIONS
- FAMILY HISTORY
- MEDICAL COMORBIDITY
- H/O SUICIDAL WISHES/ ATTEMPTS
- H/O ECT
- H/O OCCUPATIONAL IMPAIRMENT
- H/O DECREASE IN MONETORY PRODUCTIVITY
- NO OF DAYS ABSENCE FROM WORK
- SUBSTANCE USE
- IDENTIFIABLE STRESSOR PRECEDING ILLNESS
- LEGAL ISSUES

ILLNESS PARAMETERS RELATED TO DEPRESSION

- ONSET
- DURATION
- NO OF EPISODES
- POLARITY
- NO OF HOSPITALISATION
- DEPRESSED COGNITION
- PREDOMINANT DEPRESSIVE SYMPTOMS
- PSYCHOMOTOR ACTIVITY
- SLEEP
- APETITE
- SEXUAL FUNCTION
- ANHEDONIA
- SUICIDAL WISH/ ATTEMPT
- LOSS OF JOB
- RELATION SHIP ISSUES

SNO	AGE -years	SEX	EDUCATION	OCCUPATION	INCOME	SES	ADDRESS	MARIETAL STATUS	RELIGION	FAMILY TYPE	HOUSING	PROPERTY LOSS	DEBT	IF yes	GENERAL PARAMETERS	AGE OF ONSET-YEARS 1S	NO OF EPISODE	NO.OF HOSP	PSYCH	GENERAL	FHO	TYPE	CMI-MED	MENTION IF YES	SUIC-ATTEMPT	SUI.WISH	ECT	DUATON OF OCCU.IMPAI	SUBSTANCE	STRESSOR	TEMPERAMENT	SCALES	TAS	ALEXITHYMIA	PHQ15	HAM D	SOFAS
1	32	1	6	3	3	4	1	1	1	1	1	Y	Y	2		32	1	N	1	0	Y	2	Y	3	0	0	N	2	1	Y	1		64	A	16	20	43
2	27	2	7	9	3	4	3	2	1	2	1	N	N	0		27	1	N	0	0	N	0	Y	3	0	1	N	0	0	Y	1		63	A	9	20	42
3	36	2	4	4	1	1	1	1	1	1	2	Y	Y	2		32	2	Y	1	2	Y	1	Y	3	1	1	N	2	0	Y	2		61	A	12	19	42
4	45	1	2	2	1	1	1	1	1	2	2	Y	Y	2		40	2	Y	0	2	Y	3	Y	1,2	0	0	N	2	1,2	Y	3		66	A	19	12	52
5	65	1	2	2	1	2	2	1	2	2	2	Y	Y	3		42	3	Y	2	3	Y	1	Y	1,2,4	0	0	Y	2	1,2	Y	2		42	NA	23	12	53
6	65	1	2	2	1	2	2	1	1	2	2	Y	Y	3		35	3	Y	2	3	Y	1	Y	1,2,4	0	0	Y	2	1,2	Y	2		41	NA	24	13	53
7	38	0	2	3	2	1	3	3	3	1	2	Y	N	0		32	2	Y	0	2	Y	3	Y	1,2	1	2	N	2	0	Y	2		64	A	9	22	42
8	30	2	7	9	3	4	3	2	1	2	1	N	N	0		30	1	N	0	0	N	0	Y	3	0	1	N	0	0	Y	1		68	A	9	22	43
9	40	2	3	3	2	2	2	3	2	1	2	Y	Y	2		34	2	Y	1	1	Y	2	Y	1,2,3	1	1	N	2	1	Y	1		66	A	11	22	43
10	40	2	2	2	1	2	2	3	1	1	2	N	Y	3		32	3	Y	3	2	Y	4	Y	1,2,3	2	2	Y	2	1	Y	3		41	NA	19	21	41
11	36	2	2	2	1	2	3	3	3	2	2	Y	Y	3		34	2	Y	1	1	Y	2	Y	3	1	0	Y	2	0	Y	3		69	A	9	23	43
12	38	2	2	3	2	1	3	3	3	1	2	Y	N	0		36	2	Y	0	2	Y	3	Y	1,2	1	2	N	2	0	Y	2		71	A	10	24	44
13	54	2	2	2	1	2	2	1	3	1	2	Y	Y	2		45	2	Y	1	2	Y	2	Y	4	1	1	N	2	1	Y	1		34	NA	19	12	53
14	42	2	3	3	2	2	3	2	1	1	1	N	N	0		40	2	Y	0	1	N	0	Y	1,2	0	0	N	2	1	N	1		38	NA	21	18	44
15	34	1	6	3	3	4	1	1	1	1	1	Y	Y	2		34	1	N	0	0	Y	2	Y	3	0	0	N	2	1	Y	1		72	A	9	22	43
16	22	2	4	4	2	2	2	2	1	1		N	N	0		22	1	N	0	0	Y	2	Y	3	0	0	N	1	0	Y	3		73	A	8	14	44
17	36	2	4	4	1	1	1	1	1	1	2	Y	Y	2		35	2	Y	1	2	Y	1	Y	3	1	1	N	2	0	Y	2		42	NA	18	12	52
18	26	1	3	3	2	1	2	2	1	1	2	Y	Y	2		26	1	N	0	0	N	0	N		0	0	N	2	1,2	N	3		43	NA	8	23	63
19	40	1	3	3	2	2	2	2	1	2	2	Y	Y	2		36	2	Y	1	1	Y	2	Y	1	0	0	N	2	1,2,3	Y	3		72	A	22	21	43
20	30	2	2	2	2	1	1	2	3	1	2	N	N	0		23	3	Y	0	1	Y	1	Y	3	2	2	N	2	1	Y	3		32	NA	7	12	63
21	49	1	2	2	1	2	2	1	1	2	2	Y	Y	3		40	3	Y	2	3	Y	1	Y	1,2,4	0	0	Y	2	1,2	Y	2		68	A	22	18	42

22	24	2	4	4	2	2	2	2	1	1		N	N	0		24	1	N	0	0	Y	2	Y	3	0	0	N	1	0	Y	3		72	A	7	23	46
23	45	1	2	2	1	2	2	1	1	1	1	N	N	0		41	2	N	0	0	Y	1,2	N		1	1	Y	2	1	Y	3		68	A	19	22	53
24	50	1	3	3	2	2	2	1	1	1	1	N	N	0		43	3	Y	1	1	Y	2	Y	1,2	1	2	Y	2	1,2	N	3		44	NA	24	14	52
25	30	2	3	4	2	2	2	2	1	1	2	N	Y	2		23	2	Y	1	1	Y	2	Y	1,2	1	0	Y	2	1,2	Y	3		68	A	8	21	44
26	40	1	2	2	1	2	2	1	1	1	1	N	N	0		38	2	N	0	0	Y	1,2	N		1	1	Y	2	1	Y	3		69	A	19	18	52
27	40	1	3	3	2	2	2	1	1	1	1	N	N	0		32	3	Y	1	1	Y	2	Y	1,2	1	2	Y	2	1,2	N	3		46	NA	19	17	54
28	30	2	3	4	2	2	2	2	1	1	2	N	Y	2		24	2	Y	1	1	Y	2	Y	1,2	1	0	Y	2	1,2	Y	3		65	A	7	23	41
29	50	2	2	2	2	1	1	2	3	1	2	N	N	0		32	3	Y	0	1	Y	1	Y	3	2	2	N	2	1	Y	3		39	NA	21	21	53
30	35	1	2	2	1	2	2	1	2	2	2	Y	Y	3		25	3	Y	2	3	Y	1	Y	1,2,4	0	0	Y	2	1,2	Y	2		64	A	9	22	42
31	29	1	4	4	4	3	3	1	1	1	1	n	y	2		29	1	n	0	0	y	2	y	3	0	0	n	3	2	y	3		71	A	8	22	43
32	48	2	3	7	6	2	3	3	1	1	1	y	y	2		48	1	y	0	2	y	2	y	1,2	1	2	n	3	0	y	2		66	A	22	21	41
33	38	1	4	5	4	2	2	1	2	2	2	y	y	3		33	3	y	2	1	y	4	y	4	1	2	y	2	1,2	y	2		64	A	8	13	53
34	44	1	4	8	6	1	2	1	2	2	3	y	y	1		40	3	y	1	2	n	0	n	0	1	2	y	3	2,3	y	3		63	A	8	15	47
35	22	1	5	7	6	2	2	2	1	2	1	n	n	0		22	1	n	0	0	y	4	n	0	0	0	n	2	3	y	3		71	A	9	22	48
36	39	1	5	6	6	2	1	1	1	1	1	y	y	2		26	3	y	1	2	y	0	y	4	2	2	y	3	2,3,4	y	2		64	A	12	16	52
37	38	1	4	6	5	2	2	1	1	1	2	y	y	2		36	2	n	0	0	n	0	n	0	1	1	n	2	1,2	y	1		73	A	9	17	51
38	36	1	7	8	3	3	3	1	3	2	2	y	y	3		24	3	y	3	2	y	2	y	3	1	1	y	3	1,2	y	3		70	A	17	17	53
39	50	1	1	1	1	1	3	1	1	1	1	y	y	2		26	3	y	2	4	y	4	y	1,2,4	1	1	y	3	1,2	y	1		40	NA	21	21	41
40	44	1	2	2	2	2	2	2	1	2	2	y	y	3		30	1	y	2	3	y	3	y	1,2	1	1	y	3	1,2,3	y	1		68	A	19	16	52
41	40	2	2	2	2	1	1	2	1	1	1	y	y	2		35	2	y	1	2	y	3	y	2,3	1	1	n	2	1	y	1		70	A	18	17	53
42	60	2	1	1	1	1	1	1	1	1	1	y	y	2		30	3	y	3	4	y	2	y	1,2,4	1	1	y	3	1	y	3		34	NA	22	18	53
43	45	2	3	5	2	2	2	2	1	2	2	y	y	2		40	3	y	0	1	n	0	y	3	0	0	n	2	0	y	1		43	NA	21	18	54
44	44	1	1	1	1	1	1	2	1	2	1	y	y	2		43	2	y	2	3	y	2	y	2	0	0	n	3	2,3	y	3		43	NA	22	17	42
45	26	2	6	8	3	3	3	2	1	1	2	n	n	0		24	2	n	0	0	y	4	y	3	0	0	n	2	0	y	1		61	A	9	12	52
46	21	2	5	1	1	4	2	2	1	1	1	n	n	0		21	1	n	0	0	n	0	y	3	0	0	n	1	0	y	3		69	A	9	13	52
47	35	2	3	4	2	2	2	2	2	2	2	y	y	1		33	2	y	1	1	y	2	y	1,3	1	1	n	3	0	y	2		40	NA	11	13	61
48	61	1	1	1	1	1	1	1	1	1	1	y	n	0		61	1	y	1	3	n	0	y	2,4	0	0	n	2	1	n	1		36	NA	23	18	52
49	35	2	4	4	2	2	1	2	1	1	2	n	n	0		33	2	n	0	0	n	0	y	3	0	0	n	2	0	y	2		71	A	8	17	63
50	50	1	2	2	2	2	2	1	1	2	2	n	n	0		50	2	y	2	3	y	2	y	2	0	0	n	2	2,3	y	2		36	NA	23	14	47

51	24	2	4	4	4	3	2	2	1	2	2	n	n	0		24	1	n	0	0	n	0	n	0	0	0	n	3	0	y	3		36	NA	9	12	62
52	47	2	2	2	2	2	2	2	1	2	2	y	y	2		24	3	y	2	3	y	3	y	3	0	0	n	1	0	y	3		44	NA	8	13	63
53	36	2	2	2	2	2	2	2	1	1	2	n	n	0		19	3	y	1	2	n	0	y	3	0	0	n	3	0	y	1		36	NA	9	12	63
54	50	2	2	2	2	2	3	1	1	1	1	y	y	2		26	3	y	2	4	y	1,2	y	1,2,3	1	1	y	3	0	y	1		41	NA	12	14	61
55	45	2	4	4	3	3	2	2	1	1	2	y	y	2		40	2	y	1	2	y	3	y	3	0	0	n	3	0	y	1		40	NA	10	13	63
56	50	2	2	3	2	2	2	1	1	2	1	y	y	1		46	3	y	2	3	y	3	y	2	0	0	n	2	0	y	1		36	NA	18	18	52
57	38	2	4	7	4	3	3	3	1	2	2	y	y	3		26	3	n	0	0	n	0	n	0	0	0	n	2	0	y	1		73	A	8	21	42
58	30	2	3	4	4	2	2	1	1	2	2	y	n	0		19	2	n	0	0	n	0	n	0	0	0	n	3	0	y	1		68	A	9	22	43
59	41	2	2	2	2	2	1	1	1	1	1	n	n	0		34	3	y	2	4	y	3	n	0	0	0	n	2	1	y	2		73	A	8	22	44
60	53	2	2	2	2	2	1	1	1	2	2	y	y	2		30	3	y	2	3	y	3	y	1,2	0	0	n	2	0	n	2		28	NA	19	17	52
61	23	2	4	4	1	2	2	2	1	2	2	n	n	0		23	1	n	0	0	n	0	n	0	0	0	n	2	0	y	3		66	A	13	21	43
62	40	2	4	4	2	2	3	2	1	2	2	y	y	2		26	2	y	2	3	y	3	y	3	1	1	y	3	0	y	3		48	NA	18	22	42
63	36	2	4	4	2	3	2	1	1	2	2	Y	N	0		36	2	N	0	0	Y	2	Y	3	1	0	N	2	0	Y	2		66	A	13	21	44
64	40	2	3	3	4	3	2	1	1	1	1	N	N	0		32	3	Y	1	1	Y	1	N	0	1	1	Y	3	0	Y	2		73	A	14	22	43
65	26	2	6	8	3	3	2	2	1	2	1	N	N	0		26	1	N	0	0	N	0	Y	3	0	0	N	2	0	Y	3		69	A	13	21	44
66	46	2	4	7	5	3	2	1	1	1	1	Y	Y	2		23	3	Y	2	0	N	0	Y	2,3	0	0	N	3	0	N	1		46	NA	19	20	42
67	26	2	2	3	2	2	2	2	1	2	2	N	N	0		26	1	N	0	0	Y	4	N	0	0	0	N	2	0	N	1		64	A	9	19	43
68	40	2	4	4	3	2	2	1	1	1	1	N	N	0		32	2	N	0	0	Y	3	N	0	0	0	N	2	0	N	2		39	NA	18	21	44
69	35	2	4	4	3	2	2	1	1	1	1	N	N	0		32	2	N	0	0	Y	3	N	0	0	0	N	2	0	N	2		66	A	9	21	46
70	36	2	4	4	3	2	2	1	1	1	1	N	N	0		32	2	N	0	0	Y	3	N	0	0	0	N	2	0	N	2		43	NA	18	14	52
71	52	2	1	2	1	2	2	1	1	1	1	N	N	0		32	2	N	0	0	Y	3	N	0	0	0	N	2	0	N	2		39	NA	24	16	45
72	58	2	1	2	1	2	2	1	1	1	1	Y	Y	2		23	3	Y	1	1	Y	2	Y	1,2	1	1	Y	2	0	Y	2		40	NA	25	15	43
73	49	2	1	2	1	2	2	1	1	1	1	Y	Y	2		23	3	Y	1	1	Y	2	Y	1,2	1	1	Y	2	0	Y	2		36	NA	26	16	49
74	30	2	6	8	3	3	2	1	1	1	1	N	N	0		26	3	Y	0	0	N	0	Y	3	0	0	N	2	0	Y	2		71	A	9	21	53
75	52	2	1	3	1	2	2	1	1	1	1	Y	N	0		23	3	Y	1	1	Y	2	Y	1,2	1	1	Y	2	0	Y	2		39	NA	24	13	53
76	63	2	1	3	1	2	2	1	1	1	1	Y	N	0		23	3	Y	1	1	Y	2	Y	1,2	1	1	Y	2	0	Y	2		43	NA	19	13	53
77	55	2	1	3	1	2	2	1	1	1	1	Y	N	0		23	3	Y	1	1	Y	2	Y	1,2	1	1	Y	2	0	Y	2		44	NA	18	14	52
78	46	2	4	7	5	3	2	1	1	1	1	Y	Y	2		23	3	Y	2	0	N	0	Y	2,3	0	0	N	3	0	N	1		39	NA	17	15	54
79	35	2	6	8	3	3	2	1	1	1	1	N	N	0		26	3	Y	0	0	N	0	Y	3	0	0	N	2	0	Y	2		46	NA	21	17	56

80	38	2	4	4	3	2	2	1	1	1	1	N	N	0		32	2	N	0	0	Y	3	N	0	0	0	N	2	0	N	2		36	NA	23	18	54
81	40	2	4	4	3	2	2	1	1	1	1	N	N	0		32	2	N	0	0	Y	3	N	0	0	0	N	2	0	N	2		39	NA	21	15	58
82	56	2	1	2	1	2	2	1	1	1	1	Y	Y	2		23	3	Y	1	1	Y	2	Y	1,2	1	1	Y	2	0	Y	2		34	NA	24	11	54
83	48	2	1	3	1	2	2	1	1	1	1	Y	N	0		23	3	Y	1	1	Y	2	Y	1,2	1	1	Y	2	0	Y	2		36	NA	22	18	53
84	28	2	2	3	2	2	2	2	1	2	2	N	N	0		26	1	N	0	0	Y	4	N	0	0	0	N	2	0	N	1		67	A	9	22	43
85	29	1	2	3	2	2	2	2	2	2	2	N	N	0		26	1	N	0	0	Y	4	N	0	0	0	N	2	0	N	1		64	A	8	22	44
86	40	1	2	2	2	2	2	2	3	2	2	y	y	3		30	1	y	2	3	y	3	y	1,2	1	1	y	3	1,2,3	y	1		64	A	9	17	51
87	42	1	2	2	2	2	2	2	3	2	2	y	y	3		30	1	y	2	3	y	3	y	1,2	1	1	y	3	1,2,3	y	1		66	A	9	17	53
88	32	1	4	6	5	2	2	1	1	1	2	y	y	2		36	2	n	0	0	n	0	n	0	1	1	n	2	1,2	y	1		71	A	13	13	52
89	40	1	5	6	6	2	1	1	1	1	1	y	y	2		26	3	y	1	2	y	0	y	4	2	2	y	3	2,3,4	y	2		72	A	9	14	53
90	52	1	2	2	1	2	2	1	2	2	2	Y	Y	3		45	3	Y	2	3	Y	1	Y	1,2,4	0	0	Y	2	1,2	Y	2		63	A	8	12	54
91	36	1	2	2	2	2	2	2	1	2	2	y	y	3		30	1	y	2	3	y	3	y	1,2	1	1	y	3	1,2,3	y	1		66	A	6	12	53
92	40	1	5	6	6	2	1	1	1	1	1	y	y	2		26	3	y	1	2	y	0	y	4	2	2	y	3	2,3,4	y	2		72	A	9	14	53
93	40	1	5	6	6	2	1	1	1	1	1	y	y	2		26	3	y	1	2	y	0	y	4	2	2	y	3	2,3,4	y	2		72	A	9	14	53
94	32	1	4	6	5	2	2	1	1	1	2	y	y	2		36	2	n	0	0	n	0	n	0	1	1	n	2	1,2	y	1		71	A	13	13	52
95	36	1	2	2	2	2	2	2	1	2	2	y	y	3		30	1	y	2	3	y	3	y	1,2	1	1	y	3	1,2,3	y	1		66	A	6	12	53
96	35	1	2	2	2	2	2	2	3	2	2	y	y	3		30	1	y	2	3	y	3	y	1,2	1	1	y	3	1,2,3	y	1		66	A	9	17	53
97	38	1	2	2	2	2	2	2	3	2	2	y	y	3		30	1	y	2	3	y	3	y	1,2	1	1	y	3	1,2,3	y	1		66	A	9	17	53
98	40	1	5	6	6	2	1	1	1	1	1	y	y	2		26	3	y	1	2	y	0	y	4	2	2	y	3	2,3,4	y	2		72	A	9	14	53
99	36	1	4	6	5	2	2	1	1	1	2	y	y	2		36	2	n	0	0	n	0	n	0	1	1	n	2	1,2	y	1		71	A	13	13	52
100	34	1	5	6	6	2	1	1	1	1	1	y	y	2		26	3	y	1	2	y	0	y	4	2	2	y	3	2,3,4	y	2		72	A	9	11	53